

In one exercise for the *Anti-Aging Therapeutics* class, students were assigned the task of writing hypothetical letters to UConn women's basketball star Paige Bueckers about the field of Geroscience. These are their "letters":

Dear Paige,

I loved what you said:

*“Before [my injury] I didn’t really care about the science of anything. I cared about the science of putting the ball in the basket.”*

That’s real. But the fact that you’re now thinking beyond the game—and into recovery, resilience, and longevity—means you’re already stepping into something bigger than sports. And science might just be your new teammate.

There’s a field called geroscience—it studies *why* we age and how we can *slow the aging process* so we can stay healthy and high-functioning longer. Not to live forever, but to protect the energy, strength, and clarity that let you keep doing what you love. In your case, that’s breaking ankles and draining jumpers.

The core idea is this: *by targeting the biological mechanisms of aging itself*, we might be able to prevent or delay multiple diseases at once. One of those mechanisms is cellular senescence—when cells stop dividing, start secreting inflammatory stuff, and kind of hang around like tired defenders who won’t sub out. These “zombie cells” accumulate with age and injuries, contributing to slower recovery, chronic inflammation, and tissue breakdown. Not great for a pro athlete.

Now, the good news: a lot of what we already know helps you dominate on the court also happens to support healthy aging. Things like:

- Sleep: deep, regular sleep isn’t just recovery—it’s hormone regulation, memory consolidation, and immune support.
- Strength and mobility training: keeps bones dense, joints stable, and mitochondria firing.
- Cold exposure and contrast therapy: potentially reduces inflammation and boosts resilience at the cellular level.
- Balanced nutrition: supporting your gut, your metabolism, and your muscle mass all at once.

Studying and tackling these factors through geroscience might just help make sure it’s not only long—but powerful, too.

With major respect, YK

Dear Paige,

I have been following your incredible basketball career since I came to UConn, and I am excited to see you continue to grow and nurture your skills. As an undergraduate student currently learning more about aging and health, I want to share some findings that could help you age well as a professional athlete. Geroscience, a field of research that focuses on understanding the relationship between aging and age-related diseases, explores how to increase the number of years we live in good health, instead of only concentrating on how long we live. I know you are no stranger to strenuous exercise, hence a good recovery-focused activity you can do is light swimming. It is gentle on your joints, promotes circulation, and helps reduce inflammation without overloading your muscles. Swimming can help offset cellular senescence, a process where damaged cells stop dividing and start releasing harmful chemicals that can interfere with tissue repair and slow down recovery. Moderate exercise like swimming can lower inflammation which may help reduce the effects of senescent cells. You could also incorporate mindfulness-based meditation or yoga into your routine, to reduce stress and help maintain memory.

It is important to be cautious, many anti-aging products on the market overpromise and underdeliver. Snake oil salesmen, among other vendors, are attempting to exploit individuals, giving false hope to those desperate enough to try their therapeutics. Best to be skeptical of anything that sounds too good to be true. Steer clear of overusing steroid or hormone-based supplements because these could alter your body's natural hormone and have serious side effects. Be cautious with miracle detox or cleansing diets because long-term fasting can lead to increased stress and potential muscle loss over time. Your resilience is inspiring, and many people want the best for you and your career so do further research if necessary but don't take anything at face value.

Everyone's health needs are different so please consult your physician before making any changes to your routine, whether behavioral, nutritional, or pharmacological. Thank you for taking the time to read this email, can't wait to see you play again.

Best wishes,

AP

UConn Undergraduate Student

Dear Paige Bueckers,

I wanted to introduce a fascinating and growing field in science, Geroscience, which focuses on bridging the gap between aging and the onset of disease by understanding how our bodies change on a physiological and molecular level over time. While exercise and a nutritious diet have long been shown to support healthy aging, which you clearly already practice as the amazing athlete you are, there are also additional interventions that researchers have been studying over the years and collecting promising data for! Certain examples of supplements currently undergoing clinical trials, meaning they have passed cell and mouse models, and can now be tested in humans, include NAD<sup>+</sup> boosters, and anti-inflammatories like aspirin. You train a lot, which is awesome, but excessive exercise, especially when paired with insufficient rest, can increase inflammation in your body, particularly in vulnerable areas like your knee.

Two major hallmarks of aging are chronic inflammation and mitochondrial dysfunction. The phrase, “mitochondria are the powerhouse of the cell,” still holds strong, they are essential for producing ATP, the major source of energy in our body that helps fuel our everyday activities and maintain our complex metabolic processes. Unfortunately, as we age, mitochondria become less efficient and more dysfunctional, and NAD<sup>+</sup> levels decline, leading to increased senescence, a process by which cells permanently stop growing and start releasing inflammatory molecules that are harmful to surrounding tissue, contributing to the onset of various diseases. NAD<sup>+</sup> is an important molecule in our mitochondria that is vital in making ATP. By supplementing our bodies with it, we are attempting to enhance mitochondrial function. Similarly, aspirin has shown health benefits beyond just pain relief. Aside from chemotherapy, NSAIDs like aspirin have found to reduce the risk of cancers. In the context of aging, reducing inflammation can help prevent excessive damaging of our tissues.

That said, it is important to avoid taking supplements that lack scientific evidence and be cautious of the demographic the drug is intended for! The dietary supplement industry values at around 86 billion dollars, and social media trends love to market products like “bloom nutrition” that claim to solve your gut problems, and the pharmaceutical industry valuing at around 1.6 trillion dollars, can market the infamous Ozempic to reduce your appetite, but for patients that are not obese or do not have diabetes, this product can damage your organs and lead to muscle loss. While the gut microbiome plays a huge role in overall health and aging as well, products like “Bloom Nutrition” have no long-term scientific evidence of health benefits, so I would encourage you do not accept brand-deals with them as well.

Lastly, I want to stress that I am not a licensed healthcare professional, and you should always consult your physician before undertaking any behavioral, nutritional, or pharmacological changes in your life!

Wishing you continued strength and success,  
AG

Dear Paige,

Congratulations on your National Championship win! My name is EH, and I am a senior Molecular and Cellular Biology major. I am currently taking a class called Anti-Aging Therapeutics. In this class, we discuss geroscience, which is a field that focuses on the biological processes of aging and how they contribute to age-related diseases. Researchers in this field try to identify potential interventions that can slow down the aging process, which can in turn improve health and lifespan. There are many interventions that help with this process, including nutrition, exercise, and supplements.

As you are a popular young athlete, it is important that you try to preserve your physical and mental capabilities. There are going to be plenty of people who tell you to take a certain supplement that can help slow down aging. However, these “fads” might not be in your best interest. You and other athletes should absolutely stay away from smoking. I understand that you have learned this at some point in elementary school, but as we see, many people resort to smoking for social reasons. Li et al. mentions that smoking is known to accelerate your aging by damaging and mutating your DNA. Also known as genomic instability, these damages can accumulate to harm not just your regular bodily function, but also how you play and your risk for developing cancer in the future. Would you really want your rookie season in the WNBA cut short because your friends peer pressured you into smoking a cigarette with them?

I am no medical professional, so you should absolutely consult a physician before you make any changes to your medication, nutrition, and exercise to see if they are optimal for your lifestyle. I wish you the best of luck on your health journey! Go huskies!

EH

Good afternoon Paige,

Congrats on winning nationals! It was a great game. I have heard from the newspaper that you talked about not being interested in science, however, the field of geroscience may interest you since it will affect your future self. The goal of this field is to find health-extending treatments. There are two ways to measure age: chronological age, which is determined by the day you were born, and biological age, which is determined by the body's condition. Some of the factors scientists use to determine biological age are called the Hallmarks of Aging. They are biological processes that function worse with age. One is the disruption of autophagy, the process in which cells destroy dysfunctional organelles to recycle the materials. If a cell does not go under autophagy, it could go through other destruction processes, which can cause inflammation and are less suitable for health. This can be induced by intense exercise, so if you continue living your current lifestyle, you have a higher probability of aging healthily. Although I am not a medical professional, please consult them before taking my advice. Do not trust anyone who is trying to sell you drugs or other expensive therapies to stop aging. Aging is a healthy and normal human process and should not be feared. Some people may sell you drugs that stop aging and tend to target processes that are important to growing and are beneficial for young people like yourself. These people are just trying to use the societal fear of aging and getting people to use drugs like Metformin for a young adult without any health conditions. You should be especially skeptical of people who are not your doctors offering it to you.

Good luck next year with basketball.

Sincerely

RMN

Dear Paige “Buckets🏀” Bueckers,

Congratulations on being a national champion and being the #1 overall pick for the WNBA Draft! My name is BB, I am a junior majoring in Molecular and Cell Biology.

I am writing to discuss the field of geroscience, the science of aging and how to age healthily. This field examines how we age in good health - not measuring how long we can live attached to machines, but how we can live well and independently.

I know that you are an active elite-athlete, and do not need input on how to exercise. However, there are some new interesting ways to preserve muscle-mass to prolong your basketball career. Sarcopenia, the loss of muscle mass often due to aging, is thought to result from chronic inflammation, a hallmark of aging. Although you are young, preventative measures can be taken now. Ryoma Matsuzaki and colleagues found evidence that green tea catechins, which are molecules that can reduce the impact of harmful molecules released when cells produce energy, can alleviate symptoms of sarcopenia. Their research suggests that along with exercise, drinking green tea could reduce muscle loss due to age. Therefore, I suggest you drink green tea.

Please be careful of people advertising “anti-aging” products. Now that you are becoming a wealthy athlete, people will try to exploit your finances and convince you to buy products you do not need. For example, “drip bars” that offer intravenous (IV) therapies for cosmetic reasons, have little evidence backing their efficacy. They are costly, and the invasive procedure of IV placement poses more risk than benefit. Dr. Robert Shmerling from Harvard University writes that a well-hydrated person does not benefit from IV therapies.

Please consult your physician before making any changes, and be wary of anti-aging trends.

Best,

BB

Dear Paige Bueckers,

I am a molecular and cellular biology major at UConn who studies geroscience. This new field aims to understand the aging process and prevent the onset of age-related diseases. I know you are probably busy being drafted to the WNBA, but I want to warn you about some “snake oil salesman” who may want you to promote their products.

As we age, many aspects of our bodily systems go awry. Not only does our hair turn grey, but our cells undergo changes, too. The hallmarks of aging are a framework that describes many components that contribute to aging on a cellular level. For instance, our cells struggle to communicate with one another, and we experience chronic inflammation. Interventions that target the aging process are promising. In particular, research has shown that caloric restriction can allow you to age healthily by increasing autophagy, where cells recycle damaged parts of themselves. This allows your cells to stay healthy so you can continue to feel young throughout your career.

However, many products exploit people's desire for anti-aging therapeutics without strong scientific evidence. For example, a popular trend is taking NAD<sup>+</sup> supplements or injections. NAD<sup>+</sup> is an important player in energy production and is mainly related to the hallmark of mitochondrial dysfunction. The mitochondria are famous for being the powerhouse of the cell. Although companies claim NAD<sup>+</sup> is the fountain of youth, the research is less clear. Studies of NAD<sup>+</sup> supplementation in humans are minimal. The participants showed increased levels of NAD<sup>+</sup> after supplementation, but physiological improvements are unclear. Only a few studies have demonstrated clinical benefits, with the rest showing no clear improvements. Stay away from any product claiming to be the fountain of youth. Please consult your physician before undertaking any behavioral, nutritional, or pharmacological changes.

Best,  
KG

Good morning Paige,

Congratulations on winning the National Championship. You are an inspiration to many people, young and old alike. My name is AP. I am a molecular and cell biology student at the University of Connecticut. Recently, I saw your quote about how you did not really care about science before your injury. As a proud fellow Husky who is currently taking an Anti-Aging Therapeutics course, I wanted to share with you some tips that will hopefully help you age well as a professional basket player.

A field I have learned in class that relates to what you have shared is geroscience, which is the study of how targeting biological processes that drive aging and increase the risk of chronic diseases may help extend both the length and quality of life.

Some activities suitable for your age that can help you have a high quality life as you grow older is adequate sleep and a nutrient dense diet. During sleep, our bodies activate repair pathways that help fix the accumulation of DNA damage, which is a process known as genomic instability. Additionally, eating meals with a lot of high quality nutrients keep our cellular nutrient pathways finely tuned so our bodies can detect and respond to nutrients by countering deregulated nutrient sensing. Beware of snake oil salesman luring to make a quick buck by selling a quick fix.

Although it might be tempting to try various antiaging therapeutics, keep in mind that you are still young so they may have negative effects on the natural processes of your cells. NAD+ boosters are an example of supplements you should stay away from. They have no benefit for young healthy adults.

Remember to consult your physician before undertaking these nutritional changes in your life.

All the Best,

AP

Proud UConn Student

Dear Paige Bueckers,

My name is CP, and I am currently an undergraduate student studying molecular and cell biology at Uconn. Congratulations on winning the national championship! It was a great game to watch and hopefully the perfect way to end off your last year here at Uconn. Looking forward to watching your games now at a pro level. As such a high-level athlete it is well understood that you take care of your body in the optimal ways. I can offer little advice as to what regimens you need to undergo to keep yourself healthy. I was hoping to introduce you to a rapidly growing field known as geroscience, which is concerned with reducing factors that make aging dangerous to individuals. By learning about the cellular mechanisms and changes that come about as we get older, behaviors and supplements can be used to keep us healthier as time goes on. As a professional basketball player your number one goal is to stay in the best shape possible to be effective in the game. Geroscience has identified some beneficial ways to help you maintain this shape as you age and stay healthy as you finish your career in sports. Some of the easiest precautions for you to take, you are likely already doing. It has shown that frequent exercise and correct dieting can have massive impacts on keeping an individual healthier as they age. Keeping these habits up throughout your professional career, as well as after, will help your aging process drastically. In the meantime, I think the most pertinent thing for you to focus on would be stress control. Keeping yourself in such good shape and constantly needing to perform at a high level is a recipe for lots of physical and mental stress. This can translate to development of cellular events known as hallmarks of aging, which carry negative consequences to the body as we grow older. Among these 12 different events, chronic inflammation would be the one most pertinent to your case. Cortisol is one of the main hormones released during stress and typically can be used to reduce inflammation in short doses. When the body is subjected to prolonged high levels of cortisol, it can have the opposite effect. Aging already results in increased levels of inflammation, which can disrupt and make other cellular processes less efficient. By also introducing high levels of cortisol, the issue compounds. I would recommend looking into some sort of stress management or hobby to take your mind off the game in your free time. Something like yoga or reading where you can relax and let your body readjust to a baseline level. In this way you would have more control under the stress your body sees and allow yourself a rest.

As geroscience is a rapidly developing field, plenty of new drugs and supplements are being developed that claim to have beneficial effects. It is important to properly research these claims as with all growing fields, some people are looking to take advantage. I would recommend as a general practice to do some of your own research and try to find some information about the possible drug in a reputable journal. Some supplements however may be better to stay away from while you are still young and healthy. Drugs like Rapamycin have shown promising results in extending lifespan, but research is still new and needs more evidence concerning testing in young growing populations. Subjecting yourself to something like Rapamycin without doing proper research carries many risks and would not be worth it in your case. While I strongly suggest looking into the field of geroscience, I would recommend against taking any action without consulting a proper physician first. For someone as physically healthy as you are, any major changes to your daily routine would best be ran through by someone with medical experience. I would suggest doing some exploring in geroscience and possible stress management techniques and then consulting a doctor to see the best way to effectively implement into your life. Thanks for all you've given Uconn over the past 5 years, and I hope to watch you do great things in Dallas!

Sincerely, CP

Dear Ms. Bueckers,

My name is JB, I am a pre-health student at UConn. Foremost, please accept my congratulations on your recent national championship win. While you are no doubt in your physical prime, you are also familiar with how quickly injuries can relegate you to the sidelines. You have said that your ACL tear ignited an interest in science. With this in mind, I would like to call your attention to another degradative force just as capable of keeping you out of the game, but one you probably have not considered: aging. This past semester I have been taking a course focused on the topic of geroscience, a field concerned with investigating the mechanisms underlying this process, so-called hallmarks of aging, which drive the erosion of health and physical fitness we associate with getting older. As a professional basketball player, safeguarding yourself from these outcomes is paramount to a long, successful career. With this in mind, geroscience and its findings on how to slow the effects of aging may be of interest to you as well. As a young athlete, it is likely that you are already setting yourself up to age well through a healthy diet and plenty of sleep and exercise. If you happen to be practicing outside, you can also prevent premature aging in your skin by using sunscreen. Doing so will help prevent ultraviolet light from promoting one of the process' hallmarks, a reduction in autophagy, or the mechanism by which your cells degrade old or damaged materials. Just as important as knowing what you can be doing to age in a healthier manner, however, is recognizing that there are plenty of people hoping to capitalize on others' desires for anti-aging therapeutics who will promote products regardless of whether their purported benefits are backed by science. For instance, many "de-aging" skincare products can be actively detrimental to young skin, such as the popular active ingredient retinol, which can cause over-exfoliation, irritation, and vulnerability to sun damage. Ultimately, when considering anti-aging interventions, the best person to consult is your doctor, not a salesperson. Congratulations again on your victory, I wish you all the best in your future on the basketball court.

Sincerely, JB

Hello Paige,

Congrats on your national championship win. I'm a student at UConn studying molecular cell biology and loved watching you and your teammates play. I know you are going to be a menace in the WNBA next year, and to keep playing at the level you do, aging might slow you down. The field of geroscience aims to investigate how people age and how to prevent age-related diseases. You already exercise daily for basketball, so you're already going down the right track to keep you feeling young. Exercise has been linked to extended lifespan, but there are also many other ways to put off aging, or to age at a slower rate. The best part of exercise is that it falls under almost all the hallmarks of aging, but I'm only going to talk about senescence, or the permanent dysfunctional state of a cell that does not divide and accumulates with age. If you feel like reading a paper about the hallmarks of aging, the [Lopez-Otin paper](#) is amazing, but I want to keep this brief for you because I know you're getting ready for the draft tonight. Since you are still young, drugs that claim to be anti-aging might not be the best idea. Many of these drugs have side effects that at older ages can be overlooked, but at your age these side effects will interfere with your ability to shoot 3s. The most common drug that anti-aging "experts" will try to sell you on is called metformin, but prolonged usage of it causes vitamin b12 deficiency. This can make you feel tired and sometimes even faint. I don't know about you, but fainting on live television is enough to make me not want to take it. Green tea contains a compound called resveratrol which is naturally occurring and is known to reduce cellular senescence which, in turn, basically means it reduces aging. This would be an easy addition to your water while you're training to keep you playing longer than Diana Taurasi did. But before you make changes to your daily lifestyle, please consult your physician.

Excited to see you play in the WNBA,  
LP

Dear Paige,

My name is BP, and I am a fellow UConn senior and a friend of your coach Geno Auriemma. He and I recently talked about healthy aging and the field of geroscience, and he encouraged me to share some insights with you that might be useful. Geroscience is a new field focused on understanding the biological and cellular reasons behind aging, with the goal to develop therapies that target aging itself to treat multiple age-related conditions. This field has uncovered 12 biological processes, also called hallmarks, that contribute to aging and can potentially be targeted by new drugs and treatments. Even though you are still in your early twenties (and not old like your coach!), making healthy lifestyle choices now can help you age better in the future keeping you as a basketball machine for longer.

One major thing you are already to support healthy aging is staying physically active. Exercise helps cells respond to nutrients and recycle damaged proteins, two processes that tend to decline as we age. By maintaining your current lifestyle, you are already helping your body age. In addition to exercise, scientists have also uncovered drugs with anti-aging effects. One example is metformin, a drug originally developed to treat diabetes. While metformin can help with nutrient sensing and regulation and counteract the decline of these processes as we age, it is important to remember that it is a diabetes drug first. Just because it has anti-aging potential does not make it a miracle “wonder-drug”. Some people have tried to exploit these findings, claiming these so-called “wonder-drugs” have more significant effects than they do. A lot of these drugs come with serious side effects, and if unnecessarily taken, could do more harm than good. As a young individual with a strong public influence, it is important to look into the actual science before using, or promoting, one of these drugs. If you are ever unsure about a new lifestyle change, supplement, or drug, it is always smart to talk to your doctor. They can help you explain the science and figure out what is best for your body.

Feel free to reach out if you have any questions. Congratulations on ending your collegiate basketball career in such a memorable way! Good luck in the WNBA, I cannot wait to see you on the court again.

Best, BP

Good afternoon Paige,

Congratulations on the big victory! It was amazing witnessing this beautiful season! Looking forward to watching the draft on Monday! My name is KA, and I am a senior here at UConn. I am currently taking an Anti-Aging Therapeutics class where we discuss different ways to live a better-quality life.

Throughout your basketball journey you have gone through many challenges and have come out stronger on the other side. One of your many quotes that have stuck with me is when you said that before your injury you did not really look into the science of anything, more focused on how to get the ball in the basket. As someone who is such a stellar athlete, I think it is important to think about how to maintain your strength and get the most out of life no matter your age. In our class we dive into the field of geroscience. Geroscience helps with targeting aging and gives more insight on how to have a greater quality of life. Scientists in this field focus more on the aging specific process that can happen independently from a disease. Therefore, different interventions come out of this field in order to achieve to live not just longer but better. One thing that is really important to maintain as an athlete is your mitochondrial health. Mitochondria is the part of the cell where the food that you consume is turned into ATP which is the cell's energy currency. This is why it's really vital to maintain healthy mitochondria. A major hallmark of aging is mitochondrial dysfunction so being able to target this can help you age well and live better. Something worth considering adding to your routine is High-Intensity Interval Training. Such a workout routine added to your daily physical activity will help increase mitochondrial number and its efficiency to make the energy needed.

More importantly, there are many people and companies that prey on student athletes like yourself and trap them into schemes of taking supplements to stay strong and young, but that are just bad for you. With many endorsement deals coming your way I would advise for you to look into the companies that offer you any supplements. Especially if their pitch is something like "NAD+ Booster for Slow Aging", as this is very dangerous for your mitochondrial functioning. As mitochondria declines with age, over supplementing the mitochondria this early in life will disrupt the natural balance and cause even more problems. The supplements usually are a trap and will not help with bettering the quality of life. Although I have learned a lot in this class, I am definitely not an expert so take this advice with a grain of salt. If you plan on making any lifestyle changes, please consult your doctor before you do so! Good Luck in the WNBA!!

Best regards, KA

Dear Paige “Buckets” Bueckers,

My name is KH, and I am a current Junior at UConn. I’ve been to several of your games and am a huge fan. Not sure if you remember, but you reposted a picture of my friends and me last year. I recently read a segment of your interview where you mentioned how you were only focused on “the science of putting the ball in the basket.” While it seems like you have that down quite well, I wanted to tell you about another kind of science – Geroscience. Geroscience is the study of aging and the genetic, cellular, and physical mechanisms that make aging a significant risk factor, as well as how it contributes to the development of chronic diseases and conditions in older adults. The field of geroscience aims to target these mechanisms to help delay or prevent the onset of age-related diseases to increase one’s lifespan.

A key characteristic of aging is the permanent stop of cell division caused by an accumulation of cell damage or dysfunction in a process called senescence. Senescence can occur in any type of cell, however, I want to focus on fibroblasts, which are the cells that make up your tendons. Following your multitude of injuries that ultimately resulted in your torn ACL, I can only imagine the constant, lingering fear of re-injuring yourself. However, there are certain interventions you can take to prevent senescence in your fibroblasts that could help maintain your mobility as you age.

I would be cautious of any treatment you may come across yourself or be introduced to from others, as there could be conmen who may try to exploit your fame to promote their products. In addition, there are often products that are advertised as “anti-aging miracles” but in reality, do not work and can cause more harm than good. Be sure to do your research and look for valid studies and experiments in which any drug or dietary change is tested thoroughly and is published in an accredited source. Before you decide to administer or go through with any changes in your day-to-day life, be sure to talk with your physician and even your team doctor to ensure that the treatment you are interested in will truly help and is one that is compatible with your body and routine.

I hope that your time in the WNBA is injury-free and that you are able to score even more points in your career. Thank you for your time and effort that you put into this program and you will truly be missed at UConn.

Best, KH

Dear Ms. Bueckers,

Congratulations on your 2025 championship win *and* your new spot with the Dallas Wings, and good luck in the WNBA! You never fail to amaze, and I'm happy to see you succeed. As you close your time at UConn and embark on your professional career, I wanted to share some information with you as a fellow UConn student. I write to you about a new field of science that has profound implications for long-term health and performance, namely geroscience.

Geroscience is the study of the biology of aging. Even for young people at their physical and mental peaks, aging starts far earlier than most expect on the cellular level. Geroscientists seek to understand why and how our bodies change over time so that interventions can increase not just lifespan but *healthspan*, giving us more healthy and happy years in our lives. For you, this translates to increased mental and physical performance, faster recovery from injuries, and a high quality of life both during and after your career. Acting now is best described as an investment.

Aging healthily as a professional basketball player is somewhat easier than for most, so you already have a major head start. Constant exercise is a universal good for the body and will give you extra years by default, but that's not the only thing you can do. If you want to get a head start now, the best way to do it is to *eat healthily, rest properly, and avoid overtraining*. Diet and exercise together are the closest things in existence to a silver bullet for keeping yourself healthy, but rest and exertion management are also vital.

Diet, exercise, and proper rest can be directly linked to multiple scientifically acknowledged hallmarks of aging. One of these is cellular senescence. Senescent cells stop dividing and start releasing inflammatory signals, which may damage surrounding tissue. Senescence is ubiquitous in aging and directly linked to its progression. Rest and load regulation are vital to reduce senescence. Normally, the immune system removes senescent cells, especially during rest periods like sleep and simple periods without physical exertion. Joining rest with a healthy diet and load balancing can improve the body's ability to manage senescence, reducing inflammation and promoting tissue health while keeping you pain-free.

The downside of geroscience becoming popular is that a huge number of snake oil salesmen have come out of the woodwork. A lot of unfounded interventions and diets are pushed as anti-aging fads that will do nothing at best or seriously harm you at worst. The best way to avoid these is to look for scientific evidence around a supplement, diet, device, or therapy. Some charlatans push ideas like megadosing antioxidants, extreme diets, and 'secret formulae' for anti-aging supplements. There is scientific evidence that all of these things will harm you rather than help. Instead, focus on keeping it simple. Diet, exercise, and rest are all you need.

Please note – this is just a primer on geroscience, and none of this is medical advice. Be sure to consult your physician and trainers first before changing behavior, diet, or medications taken. This letter is just a starter pack of information.

Sincerely, JF

Dear Paige,

Congratulations on winning the national championship title and for being this year's number one draft pick in the WNBA! My name is JK, and I am a student at the University of Connecticut currently enrolled in a class called Anti-Aging Therapeutics. Aging, health, and sports performance are all related and I would love to offer some insight for the benefit of your career. Aging is the biggest risk factor for developing chronic illnesses, which can affect your career as a professional athlete. Geroscientists seek ways to combat aging through behavioral, pharmacological, or dietary interventions with the hope of lowering the risk of developing chronic illnesses and increasing healthspan. I want to suggest some interventions that can possibly allow you to lengthen your career as a basketball player and allow you to age healthfully.

To start, you are already at an advantage, as I am sure you lift weights as part of your training. I would like to stress the importance of this. As you age, you lose muscle mass, but grip strength is a predictor of longevity. So, continue to strength train even after you are retired, to maintain your muscle mass as you age. Continue other forms of exercise as well such as cardio. Aging is characterized by several hallmarks, things that both contribute to and are a result of the aging process. One of them is called cellular senescence, which is when a cell accumulates so much damage that it stops dividing and releases harmful particles into your body that cause inflammation. Research shows that exercise decreases cellular senescence and can therefore extend your lifespan and the overall health of your body. Caloric restriction, which is a significant (10-20%) reduction in calorie intake without malnourishment, is also shown to increase lifespan. Inflammation is another hallmark of aging, and caloric restriction is thought to decrease inflammation. So, I suggest looking into possibly reducing your calorie intake to combat aging. Partaking in these measures when you are still young will perhaps allow you to maximize your time as a professional athlete and extend your healthspan.

Lastly, I would like to warn you that many scams exist on the internet to trick people into partaking in anti-aging "interventions" that are not based on science. Taking NAD<sup>+</sup> as a dietary supplement for anti-aging purposes has become increasingly popular with influencers on TikTok and celebrities who are deathly afraid of looking older than 25. While some health benefits are known from taking this compound, not enough evidence exists to substantiate the claims that it miraculously reverses aging. So, beware of this scam, and please do not partake in any of my advice or advice from the internet without consulting your physician first. Thank you for your time and best of luck in the WNBA!

Best, JK

Hi Paige, congrats on your recent win at nationals,

I saw your recent comments about how aging has been impacting your career, and I wanted to introduce you to a novel area of biology called geroscience; the study of the foundational molecular drivers of aging. Geroscientists focus on identifying and understanding what initiates aging at the cellular level, with the ultimate goal of developing interventions that could extend healthspan; the number of years we stay healthy as we grow older. While current medical research often focuses on disease-specific treatments, aging itself has been identified as the greatest risk factor for nearly all major chronic diseases affecting older adults. This means that targeting the root causes of aging could potentially lead to broader and more effective therapies. Some scientists have already theorized on the hallmarks of aging, providing a framework to explain the processes that have been already proven to explain age related health decline.

If you want to ensure you keep your longevity on the court, you can implement a minor caloric restriction, which simply means cutting back 300-500 fewer calories than usual in your diet. A common misconception is that caloric restriction is solely for dieting and losing weight, but this is not always the goal, it's about giving your cells the ability to function efficiently. Caloric restriction has been found to reduce cellular senescence, one of the hallmarks of aging. Senescence is a process that affects damaged cells that stop dividing as an antitumor defense mechanism but don't die off. These cells release signals to adjacent healthy cells that cause them to pause their growth and division as well, leading to inflammation and possible breakdown of some tissues. Caloric restriction allows for better regulation of these zombie cells, allowing for less inflammation and therefore better longevity on the court.

Be weary of diet pills and vitamin supplements. Many companies use clever marketing to suggest their dietary pills are packed with nutrients, but these supplements are just that, add-ons to a foundationally solid diet. Relying on supplements to make up for vitamin deficiencies or as a replacement for meals can lead to issues like malnutrition. You should always try to eat a diverse palate to ensure you get all the nutrients you need.

Processed foods cut corners and include dangerous elements like trans-fats, which can lead to clogging of arteries and develop into heart disease. Although most ingredients are listed on food labels, many are foreign and unless you're a food chemist it may be hard to know which are harmful. The best way to ensure your meals are made of quality ingredients is by eating organically sourced whole foods.

I am by no means a medical professional, just somebody who is interested in basketball and cellular biology. Please make sure to consult your physician or a medical professional before committing to any behavioral, nutritional, or pharmacological changes in your life.

KS

Dear Paige Bueckers,

As a basketball player starting your professional career, you're likely thinking about your long-term health. After all, your ability to play is tied to the longevity and functionality of every part of your body, as you saw firsthand in the wake of your injury. While you are undoubtedly incredibly active, there are a myriad of other ways to ensure that you stay healthy for as long as possible, found by those who study geroscience, which researches ways to treat age-related health complications. Geroscientists do this by targeting biological processes that occur as people age that reduce the functionality of a person's cells and tissues. One of these processes is senescence, in which cells lose the ability to divide and replace themselves with new cells. Senescence also corresponds with an increase in the amount of harmful substances called reactive oxygen species within cells. Antioxidants reduce the amounts of these species, helping cells retain their ability to function and divide properly. Integrating more antioxidant-rich foods into your diet could be beneficial for your overall health.

Conversely, avoiding behaviors that accelerate aging is also important. Smoking, poor sleep, and chronic stress can all lead to the shortening of telomeres, which protect the ends of chromosomes from damage and help prevent gene mutations. When telomeres become too short, these chromosomes are damaged, which contributes to aging. That being said, before making any alterations to your diet or behaviors, be sure to consult your doctor. This is especially true when considering other anti-aging methods, as many may try to falsely advertise certain supplements or drugs as wonder drugs to counteract aging and its associated ills. These should be approached with caution, and should always be discussed with a physician before they are integrated into your lifestyle.

JD

Hi Paige,

Congratulations on the tournament title and being the first pick in the WNBA draft. You are probably looking up to Diana Taurasi and have wondered how you can have a long and successful career like hers. Today is your lucky day because I am going to tell you about a new area of research that might help you get that outcome. The field is called geroscience, and it focuses on understanding how the process of aging contributes to chronic conditions and how to slow aging. Geroscience also aims to extend health span, the years you stay strong, agile, and injury resistant. That means more legendary seasons on the court.

One main thing that was discovered to make you age is chronic inflammation. This should be concerning to you given your injury history. Some things you can do that can help you age well during your career and prevent chronic conditions are to focus heavily on recovery and avoid excessive alcohol intake.

Also, avoid getting advice from sources that are not peer-reviewed to prevent getting bad information and potentially sabotaging your career. One big diet fad right now is the ketogenic diet, where one significantly increases their fat and protein consumption and reduces carbohydrate consumption. This is a horrible diet to maintain long term because you need carbohydrates to have enough energy to perform on the court and to recover from games, and a recent study has shown that mice on a long-term ketogenic diet aged faster than those that had a regular diet. However, it is imperative that you talk to your health and performance team before you try any significant changes to your diet or lifestyle.

Hopefully you take my advice and give me a shout-out during your Hall of Fame speech 20-plus years from now.

Best, JC