Key Points

- The risk of collision sports is neither lower nor higher for those Chiari malformation. Many researchers believe that the risk is unknown because there is simply not enough information relating athletics and Chiari.
- All Chiari cases are different and many depend on the child's ability or inability to be active as well as the clinician's assessment of the patient's health and well-being.
- The slowing or stopping of cerebrospinal fluid is a concern for most doctors treating children involved in sports; if the brain is jostled around upon impact, then it will not have enough cushion to recover from a traumatic collision. This could then result in paralysis, coma, or even death.
- In this study, Dr. Meehan III and his colleagues that the risk of catastrophic outcomes in young Chiari patients was 0, but there were a few limitations involved.
- If an athlete wants to return-to-play, then they should discuss the decision with their doctor.

Definitions

asymptomatic - having no symptoms

body checking - A check, as in ice hockey, in which a player impedes another with the body

decompression surgery - common term for any of several variations of a surgical procedure to alleviate a Chiari malformation

syringo - slang term for syringomyelia, a neurological condition where a fluid filled cyst forms in the spinal cord

Source

Risk of Athletes With Chiari

Young Chiari Athletes: The Possibility of Injuries during Participation

June 2014 - Participating in athletics can be difficult for some individuals diagnosed with Chiari. Others, however, still may be able to return to sports of their choice whenever they please. Those involved in the Chiari community have a hard time calculating the risks associated with collision sports such as football, soccer, basketball, lacrosse, martial arts, and hockey. It is even harder to think about these possibilities when children are the athletes involved.

In Harvard Medical School's study of Chiari malformations and sports participation, Dr. William P. Meehan III and his colleagues discuss the chances of fatal injuries occurring on the field. The doctors participating in this study agreed that all Chiari cases are different and many depend on the child's ability or inability to be active as well as the clinician's assessment of the patient's health and well-being.

Dr. Meehan III and his associates also address the likelihood of Chiari slowing or completely stopping cerebrospinal fluid flow. Furthermore, they inform readers about the possibility of sudden death after a minor trauma or rapid head movements. Some specialists say that *asymptomatic* Chiarians cannot return to contact sports while those with symptomatic Chiari have additional restrictions when it comes to athletics. However, there are others who do not believe that non-severe, asymptomatic Chiari malformations should keep competitors from contact or collision sports.

Many doctors have diverse opinions on patient care and fitness, but whatever the circumstance, these decisions are usually made on a case-by-case basis. There are not many studies which connect Chiari to fatal collision sport injuries; therefore, it is difficult to estimate specific athletic risks. In the interest of attaining authentic answers, Harvard Medical School decided to contact 300 athletic Chiari patients between the ages of eleven and nineteen.

Although Dr. Meehan III and his team did not receive all of the questionnaires, 147 (53%) responded and completed the survey as requested. Eighty-six of the respondents were female while sixty-one were male and the average age of both groups was fifteen. Seventy-two patients underwent decompression surgery, seventy-three had not, and two decided not to answer. Out of the 147 individuals, the top three collision sports played were football, basketball, and lacrosse.

There was not a significant difference between athletes who had decompression surgery and those who had decided against it. This important information allowed researchers to collect participation data before decompression occurred and by respondents who decided against surgery. Thirty-three patients reported that they suffered a concussion while participating in sports while twenty-one experienced an injury resulting in a loss of consciousness. The medical records of the 106 individuals who did not respond to the study were then inspected for any sporting injury resulting in death, paralysis, or coma; no such trauma was found.

In the population that was studied, Dr. Meehan III and his colleagues found that the risk of catastrophic or fatal outcomes in young Chiari patients was 0. However, there were limitations to this investigation. First, since this study included only 147 participants, it does not accurately portray the probability of tragic injuries during athletics. A larger number of individuals would be needed to measure rare sports-related traumas. Second, most of the data was collected retrospectively which means individuals could recall outcomes inaccurately. Third, there was no way to accurately estimate the collision risks of young athletes with a Chiari malformation. Finally, individuals with Chiari have different anatomies which can alter the possibility of catastrophic injury.

Fatal traumas are real and measurable, but risk is favorably low even in the case of collision sports. Many athletes and clinicians agree that the benefits of participating in sports outweigh possible risks. Expert opinion as well as various case reports suggest that young athletes with Chiari may be more prone to catastrophic injury, but reasons behind why this may be the case are unknown.

As with most health related situations, risk should be considered depending on the individual's abilities or disabilities. If an athlete wants to return-to-play, then they should discuss the decision with their doctor to see if it is a possibility. Most clinicians know that every Chiari patient is not the same and will decide what can and cannot be done on a case-by-case basis.

Author's Note: We asked our followers on Facebook to answer a few questions regarding children and young adults being involved in sports. Many parents responded as well as a few individuals who were involved in athletics during high school. The majority of adolescents, aged 3-19, were decompressed with minimal pain and/or returning symptoms. However, the number of individuals involved in contact sports was almost tied with those told not to pursue high impact-associated sports. As the study declares, it mostly depends on how much or how little a person can tolerate as well as the doctor's discretion.

I also spoke to Dr. David Frim, the Professor of Surgery, Neurology, and Pediatrics at the University of

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Chicago, for a few minutes regarding young adults with Chiari that participate in contact sports. He informed me that there is not published data which states that Chiarians have a greater risk of injury during physical activity. However, he expressed that "everyone is a little bit afraid to clear someone to go back to a sport." If a patient expresses that he or she wants to continue playing, Dr. Frim warns the patient and his or her family that all collision sports are considered dangerous with a high rate of injury, but returning to athletics usually depends on the condition of the individual. The ultimate decision to return to high-risk recreational activities depends on the patient's parents as well as the school board.

Dr. Frim also shared his insight on the benefits of sports verses the potential risk of contact sports. In his opinion, it more or less depends on the sport. There are tremendous benefits in participating in athletics through elementary, middle school, high school, and college. Studies prove that those who exercise receive exceptional grades as well.

To add to Dr. Frim's understanding of young Chiarians and sports, here are a few responses from parents of student athletes:

> "I have two boys that have [Chiari] and both have had decompression surgery. I was very nervous in the beginning about contact sports. I wouldn't let my 10 year old play for years. I have finally grasped the idea that I can't keep him in a bubble… I'm sure in several years I will allow my 3 year old to play sports as well. Their doctors have gave us the okay to play sports but to proceed with caution." –*Kristal Eimer*

> "I think that my daughter being active in sports helps her cope with Chiari. It allows her to be part of the same things as other kids. This gives her the self-esteem she needs because she is different and tolerates things differently. As a parent, I need to know her limits and be able to help her learn what they are and how to deal with the things that happen to her body. Chiari can manifest in many ways and each case is different." –*Karen Purdy*

> "Before finding the Chiari 1 malformation, I remember feeling so happy that my son found his 'thing'—hockey. I was so sad for all the things they said he couldn't do, but loved to do. I explained the level of play to his neurosurgeon and she said it was okay for now, but when they start *body checking*, he has to quit. She warned of injuries that could leave him paralyzed which scared me to death. Then I wondered: what if we can find a way to protect our Chiari kids so they could play? I found helmets & neck braces for him to wear under his hockey gear. I still hold my breath every time he falls, but I want him to be both happy and safe." –*Becky Balliard*

> "My 19 year old son has played soccer for 15 years. He has never had a problem before or after surgery, nor was he given special treatment. Our only rule was that he could not practice head shots. Truth be told though, during a game he would not hold back and would often head the ball. He never experienced negative symptoms while playing. Now, as a young adult, he does experience pain in the back of his neck if he runs fast for long distances. We have no regrets letting him play; however, wrestling and football were out of the question." –*Carey Johnson*

> "My daughter is 17, diagnosed [with Chiari] at 16, and had decompression surgery a year ago next week. Our neurosurgeon is knowledgeable about Chiari and after surgery and the last MRI, which showed great improvement in regard to *syringo*, he said, 'Go have a good life.' My daughter wasn't in contact sports, although volleyball moves require diving for balls and hitting the floor. Now, she has to find a 'new norm' and rest when headaches or arm pain occur; other than that, she's good to go!" –*Laurie Bremer*

> "My daughter was diagnosed at age 5 with Chiari and Epilepsy. She had decompression surgery at age 7 and is doing very well now. She is a competitive cheerleader and we have had no sports-related problems. She does have unique concerns due to the Epilepsy which makes us very cautious. I thank God every day for her successful surgery as she was losing motor skills at an alarming rate." –*Tabbi McCallister*

Jennifer Eubanks
Chiari Community Columnist

Ms. Eubanks is a professional writing and researching scholar from Purdue University Northwest. After being diagnosed with a Chiari I Malformation in 2011, she quickly decided that being conquered was not an option—she was committed to fight and pursue a budding love of healthcare/medical writing. Spreading awareness and hope to others battling Chiari is her largest motivator alongside educating others who have not heard about the condition. Reporting for Ideas in Motion Media and tutoring at the Writing Center (Purdue University North Central) has been immensely beneficial to her success as well as all the remarkable individuals who helped her become the composer and analyst she is today.