

Sports participation for young athletes with medical conditions: Seizure disorder, infections and single organs

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Organized and recreational sports have been shown to be an important part of growth and development in children, adolescents and young adults. In addition to the health benefits of increased physical activity, sports also provide social benefits. Pediatricians play an important role in determining if young athletes can participate in various sports and the proper

equipment or precautions that are necessary. This review provides information on sports participation for athletes with specific health considerations, such as: febrile illnesses, solitary organs, seizures, and skin infections.

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Introduction

Participation in both organized and recreational sports is an integral part of growth for many adolescents. Sports provide health benefits, can be an important part of physical and emotional development, and offer opportunities for building friendships, acceptance by peers, and developing autonomy. Participation in sports provides a framework for developing skills as part of group collaboration and for developing good sportsmanship. As pediatricians we are faced with the task of evaluating our patients and providing official clearance for participation in sports. For particular situations, including skin infections, febrile illnesses, and solitary organs, recommendations have evolved through the years. In some cases, recommendations can vary among the different organizations that have taken on the task of developing sports clearance guidelines.

Why are these cases so important? In these particular situations, playing sports can lead to significant consequences for the athlete or their teammates, whether secondary to injury or due to exposure. As medical providers it is our responsibility to protect young athletes from potential harm. It is also our responsibility to make sure that we are not casting the

net too widely and excluding children and adolescents who should be able to participate. With the many benefits of sports participation, it is important to ensure that all eligible students are allowed to safely play. In this article we will look at the details of sports participation for athletes with several specific infectious and non-infectious medical conditions.

Seizure disorder

Seizure disorder is one of the most common neurologic disorders to affect the pediatric population. A person is considered to have a seizure disorder if they have at least 2 unprovoked seizures occurring more than 24 h apart. Seizures are changes in the normal electrical brain activity that result in alterations in awareness, perception, behavior, and/or movement.¹ There are several types of seizures, including focal (partial) seizures in which the abnormal neuronal activity is limited to one hemisphere, and generalized seizures that have a starting focal point but quickly spread to affect bilateral areas of the brain.

As common as it is, throughout the years and to this current day seizure disorder has held a stigma. Due to fear and uncertainty about the risks and benefits of participation in sports, many people with seizure disorders have been discouraged or restricted from various activities. Within the medical community there has been a drastic change in the recommendations for sports participation in people with seizure disorders. In 1968, the American Medical Association Committee on Medical Aspects of Sports encouraged

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participation in sports for athletes with seizure disorders in cases where the seizures were well controlled and the activity would not worsen the seizure disorder.² Participation in sports such as ice hockey, diving, boxing, soccer, rugby, lacrosse, and tackle football were restricted, due to the risk of repeated head trauma. In 1974, the American Medical Association Committee revised its recommendations.³ They acknowledged that people with well controlled seizure disorders should be allowed to play any sports, as long as the proper safeguards were in place. They stressed that while non-contact sports still remained preferable, it was important to consider each patient on a case by case basis.³ In 1983, the American Academy of Pediatrics released a statement stating that participation in sports was safe and beneficial.⁴ Having a seizure disorder should not exclude someone from participating in contact or collision sports, but activities that could pose the risk of a significant fall in the setting of a seizure should be avoided (i.e. diving, parallel bars, rope climbing). In 1997, the International League Against Epilepsy (ILAE) recommended that the only prohibited sports for athletes with seizure disorders should be skydiving and scuba diving.⁵

With all of these updated position statements, there is still hesitancy in encouraging and “signing off” on sports participation for patients with seizure disorder because there remains a fear that increased physical activity may induce seizures or increase seizure frequency, therefore putting the patients and those around them at risk.^{6,7}

The data however, shows that it is uncommon for seizures to be induced or exacerbated by exercise. A study by Nakken found that only 2% of patients with seizure disorders had exercise induced seizures (defined as seizures in >50% of the training sessions).⁸ Most occurred during strenuous activity, and among those that did experience the seizures, there was a predominance of patients with an underlying brain lesion as the cause of their seizures. There have been a few case reports describing exercise-induced seizures but most of those cases have been anecdotal. Kirsch et al found that there was not a significantly increased rate of injury when comparing cognitively normal children with a seizure disorder to their friends who did not have a seizure disorder.⁹ A study by Nakken et al showed that patients who participated in a 4 week intensive physical training program showed no change in their pre and post training seizure frequency.¹⁰ This same study also showed that there was

no significant change in their serum levels of anti-epileptic drugs.

Recommendations

Although many individuals with seizure disorder have been restricted from playing sports throughout the years, most of these restrictions have been found to be due to fear and not supported by evidence. As a result of the restrictions, children and adolescents with seizure disorders have been found to be less likely to be physically active. Physical activity has a positive effect in regards to weight reduction and reducing risk factors for conditions associated with a sedentary lifestyle (i.e. hypertension, diabetes, obesity).¹¹ There are a multitude of studies that show the beneficial aspects of sports participation on common comorbidities in people with seizure disorders, including: lower levels of depression, improvement in mood, and improvement in self-esteem.^{11–13} Based on recommendations by the AAP, AMA and ILAE, as well as mounting clinical and research evidence, there is no basis for continuing these restrictions on sports participation.

Quick facts

- The AMA, AAP, and ILAE encourage the inclusion of individuals with a seizure disorder in sports.
- A person’s seizure type, seizure frequency and compliance with medications should always be assessed when clearing an athlete with a seizure disorder for participation in sports.
- At minimum, the same standard safety precautions should be utilized in athletes with seizure disorders (including specific sports equipment and supervision) as for all other athletes.
- General recommendations for those with a well-controlled seizure disorder:
 - o No restrictions when participating in aerobic sports.
 - o Athletes with seizure disorder can participate in contact sports (including football, soccer, hockey, etc.); no consensus on whether boxing is or is not harmful based on concerns for repeated head trauma.
- Physicians should evaluate athletes with uncontrolled seizure disorder on a case by case basis.

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