

TABLE OF CONTENTS

What is Asthma	1
Who Gets Asthma	1
How is Asthma Controlled	1
What are the Symptoms of Asthma.	2
Emergency Symptoms	3
Action Plan for Athletes with Asthma.	3
What is an Asthma Attack	3
What Can Be Done During an Asthma Attack	4
Types of Attacks:	
Severe Attacks.	4
Moderate / Mild Attacks	5
The Second Wave.	5
What Triggers Asthma.	5 - 6
Sports, Activities and Asthma	7
Exercise-Induced Asthma (EIA)	7
How to Prevent EIA	8
EIA Asthma Symptom	8
Duty of Care for Coaches of People with Asthma	9
Creating a Safe Environment for People with EIA	9
Developing an Asthma Policy for Sporting and Recreation Facilities . . .	10
Drugs and Sport	10
Famous Athletes with Asthma.	10
Is Swimming Good or Bad for Asthma?	11

Basic Asthma Information

What is Asthma?

Asthma is a lifelong or chronic breathing problem caused by swelling (inflammation) of the airways in the lungs. It cannot be cured, but it can be prevented and controlled. When you have asthma, your airways are super sensitive, or "twitchy." They may react to many things. These things are called triggers. People who have asthma may wheeze or complain of feeling "tight" in the chest. They may also cough a lot when their asthma is not under control.

Is Asthma a Serious Disease?

Asthma is a serious disease, and can kill if it is not treated the right way. When it is treated the right way, people with asthma can live normal, active lives

Who Gets Asthma?

Anyone can get asthma, at any age. Sometimes it starts in infancy, other times it starts later in childhood. Although some children seem to "outgrow" asthma, the disease never really goes away, there is just a time when you are not having any breathing problems. Asthma can also start at any time during adulthood, including the senior years. Some people start having asthma symptoms after a bad cold or flu. Other people develop asthma after a work-related exposure. If you suspect that you have asthma, see your doctor or health care provider.

Prevalence of Characteristics of *Uncontrolled* Asthma for Children and Adults with Current Asthma, Michigan, 2005 [2]

Characteristic of Asthma Control	Children (<18 Years)	Adults (≥18 Years)
Had symptoms ≥9 days out of past 30	23.5%	41.0%
Nighttime awakenings ≥5 days out of past 30	12.9%	17.5%
Usual activities limited at least a little	67.6%	67.2%
Visited an emergency room or urgent care center for asthma ≥2 times in the past year	9.5%	7.6%
Hospitalized for asthma ≥1 time in the past year	6.7%	4.7%

Sources:

1. National Heart, Lung, and Blood Institute. *Guidelines for the Diagnosis and Management of Asthma: Expert Panel Report 3*. National Institutes of Health, Publication Number 09-5846. October 2007.
2. Michigan Asthma Call-Back Survey, 2005

How Is Asthma Controlled?

There are two important ways to treat and control asthma:

1. Prevent asthma symptoms from starting
2. Stopping symptoms or asthma attacks soon after they have started

The right treatment can stop symptoms or asthma attacks once they have started. It is important to treat even mild symptoms or asthma to keep them from getting worse. The earlier you treat

your asthma symptoms, the easier it is to reverse them and feel well again. Be sure to keep your quick-relief medicine handy. Get help right away if your symptoms get worse after you take your medicine, if relief from the medicine does not last for four hours, or if the quick-relief medicine does not work.

What are the Symptoms of Asthma?

Children who have asthma often learn to identify their early warning signs – the physical changes that occur in the early stage of airway obstruction. These early warning signs usually happen long before more serious symptoms occur. Being aware of these early warning signs allow the child to take medication at a time when asthma is easiest to **control**. You should encourage the child to take proper action immediately.

Knowing the signs of a beginning episode will help you and other staff take appropriate measures to avoid a more serious medical emergency. **There should be no delay once a child has notified you of a possible problem.**

A child may exhibit one of more of signs during the initial phase of an asthma episode. Not all people with asthma have the same symptoms, however, the most common symptoms are:

1. **CHANGES IN BREATHING** may include:
 - Coughing (constant or intermittent), or that happens during the night or after exercise
 - Coughing after running or crying
 - Wheezing or whistling sounds audible when a child exhales
 - Breathing through the mouth
 - Shortness of breath - or rapid breathing, chest "tightness"; they may complain that their chest "hurts" or "feels funny."
2. **VERBAL COMPLAINTS.** Often a child who is familiar with asthma will know that an episode is about to happen. The child might say that:
 - The chest is tight
 - The chest hurts
 - He/she cannot catch a breath
 - The mouth is dry
 - The neck feels funny and/or
 - A more general "I don't feel well"
 - Irritability; in a young child the discomfort of chest tightness may lead to unexplained irritability.
 - An itchy chin or neck (Some people may rub their chin or neck in response to this feeling)
 - Clipped speech – the student may speak in very short, choppy sentences.

Asthmatics often exhibit very subtle, early symptoms as well, and identifying these and pre-treating them with an inhaler can sometimes **avoid the full-out flare**.

Early/Subtle Symptoms

- | | |
|--------------------------------|--|
| 1. Mood swings | 6. Cold symptoms - cough, sneeze, runny nose |
| 2. Crankiness | 7. Trouble sleeping |
| 3. Fatigue | 8. Restlessness |
| 4. Watering eyes | 9. Low exercise tolerance |
| 5. Dark circles under the eyes | 10. Any changes in breathing. |
| | 11. Anxiety |

Flare Symptoms

1. Coughing fits
2. Wheezing

3. Shortness of breath
4. Tightness in the chest

Emergency Symptoms

1. Cyanosis blue-tinted skin, starting around the mouth and resulting from lack of oxygen in the blood
2. Posturing, hunched-over shoulders while breathing
3. Retractions - drawing in of the abdomen under the ribcage while inhaling
4. Major problems breathing
5. Severe coughing or wheezing that doesn't improve with emergency meds
6. Severe tightness in the chest that doesn't improve with emergency meds

Note: Children don't always have the self-awareness or vocabulary prowess to tell you how they feel, so keeping a categorized list of asthma symptoms can help you figure out the state of their health. Emergency signs mean your child is in distress and requires immediate medical attention. Primary symptoms require intervention, usually with bronchodilators.

Needs of the Athlete with Asthma

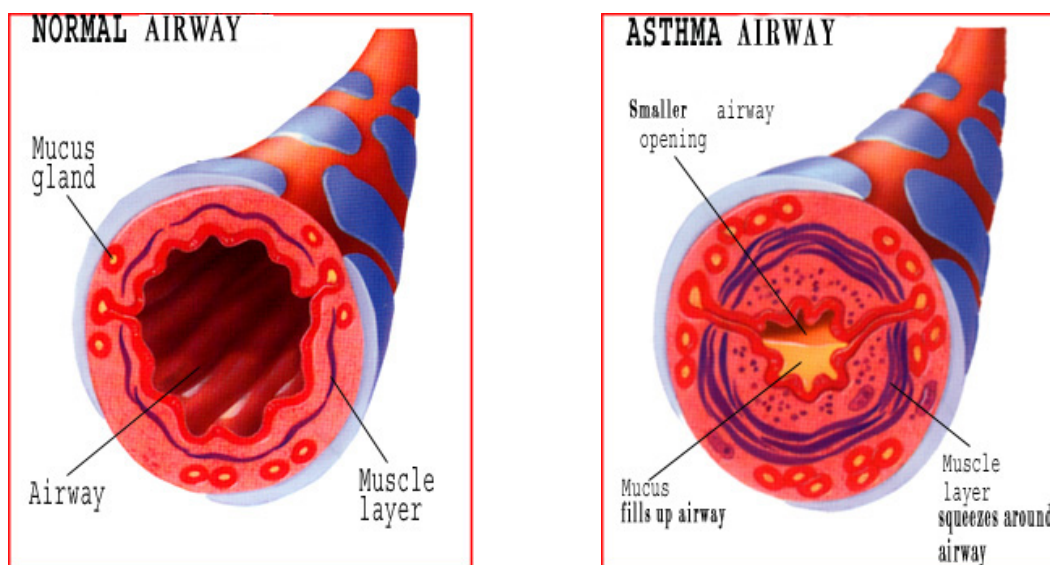
ACTION PLAN FOR ATHLETE HAVING AN ASTHMA ATTACK

If an athlete with asthma reports the above symptoms:

1. Ask athlete if he/she has an inhaler.
2. Allow athlete to use inhaler
3. Allow rest periods after use of inhaler. Athletes may resume activity once breathing has returned to normal.

What is an Asthma Attack?

An asthma "attack" or episode is a time of increased asthma symptoms. The symptoms can be mild or severe. Anyone can have a severe attack, even a person with mild asthma. The attack can start suddenly or slowly. Sometimes a mild attack will seem to go away, but will come back a few hours later, and **the second attack will be much worse than the first**. Severe asthma symptoms need medical care right away.



During an asthma attack, the lining of the airways in the lungs swells. The muscles around the airways tighten and make the airways narrower. All of these changes in the lungs block the flow

of air, making it hard to breathe. Knowing what is happening in the lungs during an asthma attack will help you to know why it often takes more than one medicine to treat the disease.

What Can Be Done During an Asthma Attack?

The best time to plan for an asthma attack is long before one happens, at the doctor's office. There, the doctor, the person with asthma and their family can make an Asthma Action Plan that will tell them what to do if asthma symptoms start.

Along with following the Asthma Action Plan, here are some other helpful hints:

1. Stay calm, and try to relax. It isn't easy! But the more you panic, the worse your breathing will get.
2. Tell someone that you are having asthma symptoms. Get help if you need it. Don't try to tough it out alone! Have the person stay with you.
3. Take the quick-relief medication as your Asthma Action Plan tells you to. Not sure which medication is the quick-relief one? Ask your doctor, asthma educator, or pharmacist about it *before* you need it in an emergency!
4. If the quick-relief medicine hasn't helped in 5-10 minutes, call the doctor or 911.
5. Keep taking the quick-relief medicine, or as directed by doctor, every 5-10 minutes until the ambulance arrives.

Learn how you feel when an attack is coming on, then get the help you need right away.

Before you have an attack, does your chest feel tight? Do you feel tired? Do you feel like it is hard to catch your breath?

Asthmatics bronchial tubes are inflamed, and the swelling narrows the airways. The inflammation also makes airways extraordinarily sensitive to triggers like allergies, viruses, exercise, and cold air. When the inflamed, hyperactive bronchial tubes encounter these triggers, two critical things happen: they produce excess amounts of mucus and they contract into bronchospasms. The mucus clogs the airways, and the spasms and swelling further restrict them.

Basically, asthmatics cannot move air in and out of their lungs as efficiently as they should. A common misconception is that an asthma flare involves a person's inability to breathe in air. In fact, the opposite is true. ***During flares, asthmatics cannot get adequate amounts of air out.*** This dead air sits trapped in the bottom of the lungs, forcing asthmatics to breathe shallowly with just the top of the lungs. They cannot take deep breaths, and during a severe flare they can wheeze and gasp for air.

Wheezing, however, is not the number one symptom of asthma; coughing is. Many asthmatics never wheeze at all, but they frequently exhibit the hallmark dry, tight asthma cough that is a symptom of the lungs trying to force the airways open.

SEVERE ATTACKS

When these happen, you may become breathless. As you're less and less able to breathe, you may have trouble talking. Your neck muscles may become tight as you breathe. Your lips and fingernails might turn a grayish or bluish color. The skin around the ribs of your chest might be sucked in; this happens most often in children. If you are using a peak flow meter you will drop below 50% of your personal best.

In the case of a severe asthma attack:

- Take your asthma medicine prescribed for an attack and get emergency medical help right away!
- You can get into trouble if you wait too long to get help. This is how people die from asthma.
- Go quickly to your health care provider's office or an emergency room. The sooner you see a health care provider, the faster you get the help you need.

MODERATE AND MILD ATTACKS

These attacks are more common. You may start to feel tight in your chest. You might start coughing or spit up mucus. You may feel restless or have trouble sleeping. You might make a wheezing or whistling sound when you breathe. This can happen as you breathe air in and out of your narrowed air tubes. What should you do in the case of a moderate or mild asthma attack? Take your asthma medicine prescribed for an attack. Usually then the air tubes in your lungs open up in minutes. Sometimes, though, it can take several hours. If your medicine does not work in the time it is supposed to, call your health care provider.

THE SECOND WAVE

In some cases, your asthma attack may seem to ease up. However, changes may take place in your air tubes that cause another attack or second wave. This can be more severe and more dangerous than the first attack. In the second wave, the air tubes continue to swell. This may happen even when you're not having asthma symptoms. At this time, you might find it harder to breathe. The second wave may last for days or even weeks after the first attack. Your lungs become more sensitive to other irritants. This can trigger more attacks.

During the second wave, you may have to be admitted to a hospital. Health care providers need to take care of your asthma and give you medicines that will reduce the swelling in your air tubes and relax the tightened muscles.

In any kind of asthma attack:

- Don't take cough medicine. This will not help your asthma.
- Take only the asthma medicines that a health care provider gives you.

Even though asthma ***cannot be cured, it can almost always be controlled***. For this reason, the American Lung Association has chosen control of childhood asthma as one of its top priorities.

WHAT USUALLY TRIGGERS ASTHMA?

Episodes of asthma often are triggered by some condition or stimulus. Common triggers of asthma are:

- Exercise
- Infections
- Allergy
- Irritants
- Weather
- Emotions (infrequent)

Exercise

Running can trigger an episode in over 80 percent of children with asthma. Bronchodilator medications used before exercise can prevent most of these episodes. With proper control of asthma, most children with asthma can participate fully in physical activities.

There might be exceptions, such as prolonged running, especially during cold weather, allergy season or illness from a "cold." ***Swimming seems to be the least asthma-provoking form of exercise.*** However, there have been recent concerns about excessively chlorinated pools precipitating asthma episodes.

Irritants

Outdoor air pollution also worsens existing asthma. Outdoor pollutants known to trigger asthma attacks include ozone, particulate matter, nitrogen dioxide, and sulfur dioxide. Children are already at greater risk from outdoor air pollution than healthy adults: they have smaller air passages which are blocked easier, they breathe more rapidly, and are less likely to acknowledge breathing difficulties resulting from pollution and limit their exposure. For a child with asthma, these concerns are especially relevant.

If your child has asthma, limit their time outdoors on days with air quality warnings, while ozone levels are peaking in the afternoon, and in areas near heavy traffic. Air quality forecasts are often included in local weather forecasts or are available at <http://airnow.gov/>.

Weather

Children with asthma have cited a number of climatic conditions as trigger factors. Many identify cold air as triggering asthma. Pulmonary function studies demonstrate that breathing cold air provokes asthma in most children with asthma.

Precautions may be necessary to avoid inhalation of cold air, such as wearing a special ski mask designed for this purpose. A heavy scarf, worn loosely over the nose and mouth, will also help avoid cold air-induced asthma.

The weather affects outdoor inhalant allergens (pollens and molds). On a windy day more allergens will be scattered in the air, while a heavy rainfall will wash the air clean of allergens. On the other hand, a light rain might wash out pollen, but actually increase mold concentration.

There does not seem to be one best climate for all children with asthma, and moving to a new area to reduce asthma severity often is met with disappointment in the long run, even after initial improvement.

Emotions

A common misbelief is that children with asthma have a major psychological problem that has caused the asthma. Emotional factors are not the cause of asthma, though emotional stress can infrequently trigger asthma. A child's asthma might only be noticeable after crying, laughing or yelling in response to an emotional situation. These normal "emotional" responses involve deep rapid breathing which in turn can trigger asthma, as it does after running.

Emotional stress itself (anxiety, frustration, anger) also can trigger asthma, but the asthmatic condition precedes the emotional stress. Therefore, a child's asthma is not "in his or her head," as many people believe.

Emotions are associated with asthma for another reason. Many children with asthma suffer from severe anxiety during an episode as a result of suffocation produced by asthma. The anxiety and panic can then produce rapid breathing or hyperventilation, which further triggers the asthma. During an episode, anxiety and panic should be controlled as much as possible. The parent should remain calm, encourage the child to relax and breathe easily and give appropriate medications.

Treatment should be aimed at controlling the asthma. When asthma is controlled, emotional stress will be reduced and other emotional factors can then be dealt with more effectively. Any chronic illness, especially if uncontrolled, can have associated secondary psychological

problems. More severe psychological problems require a specialist to help the child and his or her family.

Sports, Other Activities, and Asthma

Don't let asthma keep you from having fun with sports or other activities. Exercise is good for everyone, including people with asthma!

If you can't keep up with the other kids in gym class, can't seem to be able to "get in shape" no matter how much you work out, or have trouble breathing after exercise when your classmates don't, then exercise might be triggering your asthma. There are ways to manage asthma that is triggered by exercise, and having your asthma under control will keep you breathing easy while you play your best!

Just the facts:

- The more in shape you are, the better your lungs work.
- The better your lungs work, the fewer problems you should have with your asthma.
- The fewer problems you have with your asthma, the better you'll feel and the more you'll be able to do.
- There are lots of ways to get exercise. Find one that you like, and work with your doctor or asthma educator to keep asthma under control.
- Having an Asthma Action Plan takes all the mystery out of treating your asthma. Make sure your coaches have a copy, and know what to do if you need help.

Exercise-Induced Asthma (EIA)

Some kids have asthma that is triggered only by physical activity, called exercise-induced asthma (EIA). Just as with other asthma triggers, a person who is triggered into an asthma attack by exercise has airways that narrow and tighten after they begin exercising. Fast, hard breathing, coughing, wheezing and a tight chest are signs of an asthma attack. An asthma attack can be very serious, and can even kill.

- Symptoms of EIA can be made much worse with seasonal allergies.
- The symptoms usually start within 5 to 10 minutes after exercise, and may last as long as 30 minutes.
- If a kid with EIA doesn't get treatment, they will often keep themselves from taking part in sports or other activities. Remember, if it is treated right, EIA can be kept under control, so that kids with this kind of asthma can be as active as they want to be.

Which sport or activity is best for you?

If your asthma is under control, then you should be able to do pretty much anything you like. However, there are a few things you should think about when choosing a sport or activity:

Time Outs: Sometimes people with asthma do better in activities with clear-cut starts and stops. Some activities with built in "time outs" for rest include baseball, gymnastics and marching band. Sports like soccer don't allow as much rest time, and this may make the sport hard if your asthma is severe. In these kinds of sports, think about playing a position that ***doesn't require quite so much running***, so that you can still be involved and have fun.

The big picture: An activity may seem like a good fit for you in some ways, but there may be other reasons not to choose it. ***For example, swimming is often a great choice because the added moisture in the air at the pool soothes inflamed lungs.*** On the other hand, some

people have asthma that is triggered by the chemicals used to clean the pool. So look at everything about the activity before you make your choice.

What are the best ways to deal with asthma and exercise?

Try these tips:

- Start with a 15-minute warm-up to let your lungs adjust to the bigger demand for air.
- In cold weather, cover your mouth and nose with a scarf to help warm the air before it gets to your lungs.
- Stay away from triggers that may make your asthma worse (for example, don't exercise outdoors when pollen counts are high if pollen is a trigger for you).
- End with a 15-minute cool-down rather than stopping suddenly.
- Follow your Asthma Action Plan about using medication before or after exercise. If you're on a team, be sure your coach has a copy of your Asthma Action Plan.
- Be extra careful when:
 - You've got a cold or other viral infection
 - It's pollen season, or a cold, dry day (if these are your triggers)
- With these added problems, even gentle exercise could cause an asthma attack.
- ***If you have symptoms, use a quick-relief medicine right away. Don't push yourself, stop and rest if you need to.***

HOW TO PREVENT EIA

- ***IF*** the doctor has indicated use of quick relief inhaler prior to physical activity, ensure that the person uses their quick relief inhaler 15-20 minutes **BEFORE** they warm up.
- Ensure the player **ALWAYS WARMS UP** before any sport or exercise. A warm up usually consists of 15-20 minutes of light, intermittent exercises and stretching or 5-7 30 second sprints every 2-3 minutes approximately 30 minutes before exercise. The warm up should match the intensity of the activity to be performed.
- Athletes should **ALWAYS COOL DOWN** following sport or exercise.

What if a player experiences asthma symptoms during sport or exercise?

1. Get the person to STOP exercising!
2. Have them use their quick relief inhaler, with a spacer if available.
3. Exercise should be restarted **only** if they can breathe easily and are free of symptoms.

If symptoms do not go away immediately, or if they return when they start exercising again, they should:

- use their quick relief inhaler as before
- not return to any exercise for the rest of the day
- seek medical advice on asthma management

What exercise is suitable for people with Asthma?

People with asthma should be able to participate in almost any sport or exercise. SCUBA diving is the only sport not recommended for people with asthma.

When should a person not exercise or play sport?

- When day to day asthma is not under control – e.g. needing to use their quick relief medication more than three to four times each week for other than pre-medication before exercise
- When they have a cold or 'flu

- If the Peak Flow Meter (PFM) reading is less than 80% of their personal best. A PFM measures how much air they can blow out at once, which indicates how open (or narrowed) their airways are.

Duty of care for coaches of people with Asthma

- **Coaches, staff and trainers who supervise people with asthma in organized sport or activities have a duty of care to assist or protect those in their care.** This means that anyone involved in sporting clubs and recreational activities must be prepared to deal with reasonably foreseeable situations that may arise, including deteriorating asthma. How to fulfill duty of care
- Ensure that guidelines and policies are in place
- Staff must be trained to recognize signs and symptoms of asthma and know what to do in an asthma emergency
- Medication should always be readily available

CREATING A SAFE ENVIRONMENT FOR PEOPLE WITH EIA

Creating an asthma friendly environment for your club/organization is an excellent way of declaring that you support the person with asthma. An asthma friendly club or organization is one that endeavors to ensure a safe environment for people with asthma by creating policy, having trained personnel in asthma first aid, by having asthma first aid kits and developing strategies to increase the awareness of asthma amongst its members, players, participants and spectators.

Two key reasons for being an asthma friendly club or organization are:

1. To create a safe environment for people with asthma
2. To support people with asthma in a sports and recreation environment to not only maintain safety, but enable them to perform at their best.

Simple and effective strategies for an asthma safe environment

1. Have an asthma record card for each person with asthma.
 - An asthma record card details the person's asthma trigger factors and outlines their general asthma management and first aid protocols. The advantage of this information is that it can assist when planning an activity that may impact on a person's asthma and detail the common asthma symptoms experienced by that person.
2. Asthma First Aid training
 - Have all staff/trainers/coaches trained in Asthma First Aid. If an asthma emergency occurs in players or even spectators, you will be able to treat it and manage the person until help arrives.
3. Asthma First Aid kits
 - Asthma First Aid kits are mobile and should be easily accessible to trained staff. They will enable you to provide asthma first aid.
4. Support Exercise-Induced Asthma strategies
 - The best way to prevent Exercise-Induced Asthma is to pre-medicate, warm up and cool down. Ensure time is provided to allow the person with asthma to follow their asthma plan and build this strategy into events.
5. Asthma First Aid posters
 - Displaying Asthma First Aid posters creates an awareness of asthma amongst players, spectators and club officials as well as being a quick reference in an asthma emergency.
6. Smoke free
 - Cigarette smoke is one of the major triggers for people with asthma. Ensure you have a smoke free environment.
7. Asthma audit
 - An asthma audit is a simple checklist of prompts to help you identify items in your club's environment that could trigger an asthma attack. It is an efficient and effective way to objectively assess your environment for asthma triggers.
8. Asthma information

- Become a member of your local Asthma Foundation where asthma information is readily available. Your Foundation can send you posters, brochures and information sheets to assist you in creating an asthma friendly organization.

DEVELOPING AN ASTHMA POLICY FOR SPORTING AND RECREATION FACILITIES

A simple asthma policy will inform your members that you are asthma aware, that there are systems in place to support people with asthma and that you are trained in dealing with an asthma emergency. The policy can also outline strategies that enable your club or organization to stay asthma friendly. Furthermore, the policy will clearly show where the responsibilities lie in providing and maintaining an asthma friendly club or organization.

DRUGS AND SPORT

Certain medications are banned for athletes competing in national and international sporting events. The International Olympic Committee (IOC) has banned all oral and injectable reliever medications. Some, but not all inhaled medications are also banned. The IOC requires athletes competing in major Olympic events who use inhaled asthma medications to provide written notification to the relevant medical authority prior to the competition. Some state and national sporting associations also have the same requirement. Athletes using these medications should check requirements with their state or national sporting association.

Important Note

People engaged in competitive sport should be advised that before they take any medication either prescribed or over the counter for colds, sore throats and flu should first check with a doctor or pharmacist with expertise in this area.

Don't limit yourself.

A number of Olympic and professional athletes have asthma. Don't think you can't be part of the team because you have asthma. You can do what anyone else can do.

You may need to take asthma medicine before you work out, but don't let your asthma keep you away from sports or activities you love.

Swimming is especially good if you have asthma because you breathe in warm, humid air as you swim. Sports that have some "down time" (like baseball) might be easier to manage than those that keep you in constant motion (like soccer). But if you love a sport or activity, chances are that, working with your health care providers, you'll be able to figure out a way to play

Who says you can't be great?

At the 1996 Olympic Games, at least one in six athletes from the U.S. had a history of asthma, had taken asthma medications or had symptoms that suggested asthma. In fact, the athletes with asthma won just as many team or individual medals as the athletes without asthma.

Did you know that some famous athletes have asthma? These athletes have learned to control their asthma symptoms, and become some of the best in their sport.

- Jerome Bettis - professional football player
- Bruce Davidson - Olympic equestrian
- **Tom Dolan, Olympic medalist - swimming**
- **Kurt Grote, Olympic medalist - swimming**
- **Nancy Hogshead, Olympic medalist - swimming**
- Jim "Catfish" Hunter - professional baseball player
- Jackie Joyner-Kersey, Olympic medalist - track
- Bill Koch, Olympic medalist - cross-country skiing
- **Greg Louganis, Olympic medalist - diving**
- **Tom Malchow, Olympic medalist - swimming**
- **Debbie Meyer, Olympic medalist - swimming**
- Art Monk - professional football player
- George Murray - wheelchair athlete & Boston Marathon winner
- Robert Muzzio - decathlete
- Dennis Rodman - professional basketball player
- Jim Ryun, Olympic medalist - track
- Alberto Salazar - marathon runner

- Isaiah Thomas - professional basketball player

- ***Amy VanDyken, Olympic medalist - swimming***

Is Swimming Good or Bad For Asthma?

Guest Author - Amy Anaruk

Most asthma websites recommend swimming as one of the best forms of exercise for asthmatics, but the idea is getting controversial. The reasoning behind swimming's positive pulmonary effects makes sense. Taking deep breaths and holding your breath at regular intervals increases lung capacity and trains the lungs into steady breathing patterns, both of which can only help asthmatics.

But according to various well-respected asthma sites like **Global Initiative for Asthma** or the **Asthma and Allergy Foundation of America**, swimming is also a beneficial exercise because indoor pools provide a moist, warm environment good for lungs. This environment, researchers like Brent S. Rushall, Ph. D., and Larry Weisenthal, M.D., argue, actually makes indoor pools dangerous for asthmatics. In "Swimmers Asthma: The Serious Health Problem with Chlorinated Pools," they discuss how public pools often use too much chlorine to sanitize the water, and inhaling high concentrations of the toxic by-products of chlorine can damage the respiratory tract. Most indoor pools don't have adequate ventilation, and since chlorine gas is heavier than air, the highest concentration of toxins is close to the surface of the water, where you swim. The higher the concentration of chlorine gas, the worse the damage.

In fact, researchers in a recent European study report that areas with greater concentrations of indoor swimming pools have greater concentrations of children with asthma. The data possibly support a hypothesis that indoor pool use makes some children develop asthma, say these scientists from the Catholic University of Louvain in Brussels. The subject obviously requires more research, but chlorine is known to cause pulmonary problems if inhaled in strong concentrations.

Outside pools are not always safe, either, some scientists point out, because public pools tend to over-chlorinate for safety reasons. Usually the over-chlorination doesn't cause problems because breezes around the pool dilute the chloramines away. However, some outdoor pools with high sides can pose a danger on humid days with no breeze because the heavy, still air traps the gases close to the water surface just like in poorly ventilated indoor pools. Private pools don't carry the same risk because families don't use as much chlorine as in public pools.

Anecdotal evidence suggests many asthmatics believe regular swimming in indoor *and* outdoor pools improved their health. On the other hand, the 2000 U.S. Olympic swim team contained more asthma sufferers--one-quarter of the whole team--than any other U.S. team that year. Olympic swimmers largely train in indoor pools.

While swimming itself appears to help asthmatics, too much evidence exists for me to feel 100% safe with indoor pools. In general, I think the safest bet for asthma sufferers until the whole picture gets clearer is to use beaches and lakes more than swimming pools and to pick outdoor pools over indoor ones. I won't let my asthmatic swim in a pool if I can smell the chlorine in the air, either, and I'm keeping a close eye on advances in non-chlorine pool sterilization.