NATIONAL HEMOPHILIA FOUNDATION
for all bleeding and clotting disorders

Playing It Safe

BLEEDING DISORDERS, SPORTS AND EXERCISE

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Bleeding Disorders, Sports and Exercise

The National Hemophilia Foundation (NHF) is dedicated to finding better treatments and cures for bleeding and clotting disorders and to preventing the complications of these disorders through education, advocacy and research.

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Authors' Note

People with bleeding disorders vary widely in how they respond to taking part in sports and exercise. While the recommendations in this booklet regarding specific activities may generally apply to those with bleeding disorders, they may be inappropriate for some people. Consult with your Hemophilia Treatment Center (HTC) prior to engaging in any sport or exercise regimen.

Should People with Bleeding Disorders Participate in Sports and Exercise?

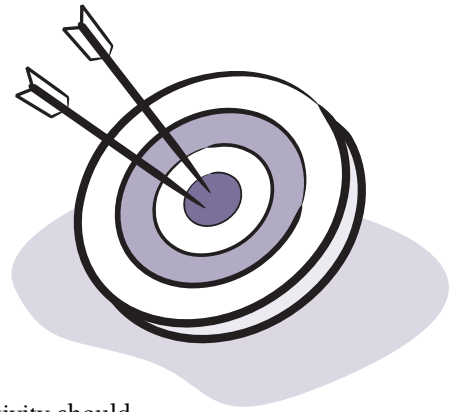
The answer is a definite "Yes!" You can choose among a wide range of physical activities, from traditional sports like T-ball and tennis to forms of exercise like walking and yoga. Sports and exercise are connected, as well; activities often thought of as exercise, like stretching and aerobics, can be part of conditioning for a sport. No matter what your choice, being active is good for everyone. It contributes to physical fitness, and it can have a positive effect on psychological and emotional well-being. Regular physical activity has other specific benefits, too:

It builds
- healthy bones, muscles, joints
- lean body mass
- self-esteem and self-confidence
- teamwork

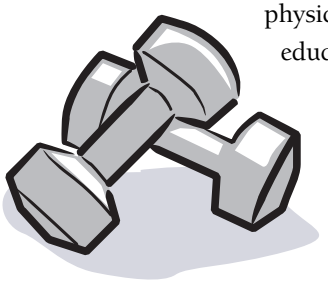
It increases
- "good" cholesterol (HDL)
- academic performance
- energy level

It decreases
- weight
- feelings of depression and anxiety

It decreases the risk of developing
- spontaneous joint bleeds
- high blood pressure
- heart disease
- stroke
- diabetes
- colon cancer



Of course, safety is important; activities must be age appropriate and properly supervised. Advances in prophylaxis have made it easier and safer for people with bleeding disorders to take part in a variety of activities, but bleeding due to injury is still a possibility. You should consider the timing of treatment in relation to physical activity. Ideally, activity should take place soon after treatment, when your factor level is at a peak. Whether or not a person is on prophylaxis, it is essential that any injury be evaluated and treated by the HTC.

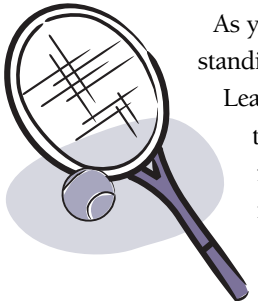


For adults with bleeding disorders, decisions about physical activity still require preparation and education. When children with bleeding disorders want to exercise or take part in a sport, particularly in competitive or team activities, their parents, school personnel, coaches, healthcare providers, and even the children themselves, may have concerns.

In this booklet, you'll find information to ease your concerns and help you make an informed decision.

For Parents of Infants, Toddlers, and Preschoolers

From infancy, children learn by interacting with their environment, so you'll want to provide your child with plenty of opportunities to explore and play. Infants with bleeding disorders can enjoy the same activities as other infants. Give your child rattles, mobiles, stuffed animals, mirrors, and toys to hold.



As your baby begins to move around—rolling, crawling, and standing—you'll need to balance their exploration with safety. Learning to stand and walk involves many falls for any toddler. For the child with a bleeding disorder, these milestones also mean more bruises. At this stage, you may feel more anxious, but keep in mind that superficial bruises are common. They are not a concern unless they are painful and cause your child to have limited movement, indicating a joint or muscle bleed.

Toddlers should be encouraged to try running, jumping, climbing, and riding wheeled toys that are low to the ground. Their playtime should be well supervised, and they should use appropriate safety equipment, like helmets, elbow pads, and knee pads. At home, consider putting cushioned, protective corners on tables, carpeting on hard floors, and gates at the tops and bottoms of staircases. Toddlers also begin to play more with other children, so be ready to help your child learn how to play safely and cooperatively.

As toddlers become preschoolers, they'll be catching, throwing, skipping, hopping, and using playground equipment. They will develop exciting new motor skills—and experience falls, bumps, and bruises as they practice those skills. To prevent serious injury, be sure that playtime is supervised and that they use safety equipment. Along with their new motor skills, they'll also develop new thinking skills, so preschoolers can begin to tell their parents when they are having a bleed.

Allowing your child to participate in age-appropriate play activities:

- improves their strength and coordination;
- prepares them to succeed when it's time to join their peers in recreational and organized sports;
- builds their self-esteem by helping them develop the same skills as their peers.

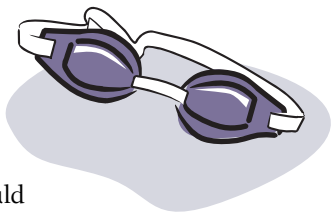
The age for starting different activities, such as riding a bicycle, will vary from child to child, based on their bleeding severity, emotional maturity, and skill level. Infants can enjoy swimming and water play, and some children may begin skating, martial arts, or T-ball at age four.

For Parents of School-Age Children

Sports play a large part in the life of school-age children, so it's important to give your child the chance to participate. Studies have shown that children with strong musculoskeletal systems have fewer spontaneous bleeding episodes.* And the best way to develop strong muscles is through regular physical exercise that allows children to build strength, endurance, and agility.

Physical activity also helps school-age children develop socially and emotionally. In competitive sports, they learn teamwork and how to win and lose. Being recognized for their accomplishments also increases your child's self-esteem—especially when the recognition comes from friends and classmates. Their emotional state can even affect bleeding; as children become more confident and independent, they often show marked clinical improvement, with fewer spontaneous bleeding episodes.

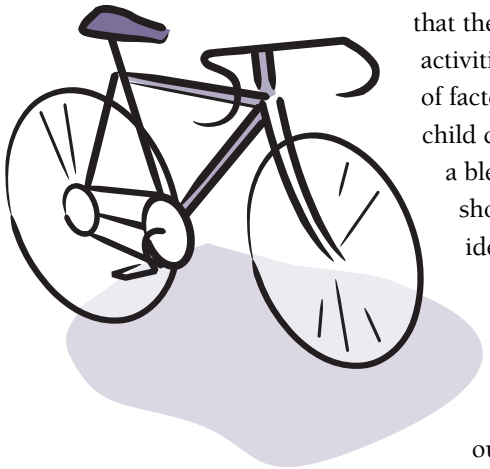
Despite these benefits, parents and school personnel often have concerns about sports participation. You might worry that your child will fail at an athletic activity, because bleeding episodes keep them from continuing or because they can't physically keep up with their peers. What can you do to lessen the likelihood of failure? The answer is simple: encourage your child to choose a sport that promises a relatively good chance of success. Allowing your child to practice assists in preparation and helps them develop the skills and strength they will need. Your child's risk of failure should then be no greater than that of any child who participates in a sport for the first time. Keep in mind, too, that it's important for children to learn to deal with failure. Through trial and error, children learn to set limits on their own behavior.



* Tiktinsky R, Falk B, Heim M and Martinovitz U. "The Effect of Resistance Training on the Frequency of Bleeding in Haemophilia Patients: A Pilot Study," Haemophilia, 8(1), 22-7, 2002.

Another concern is that playing a sport may increase the frequency of bleeding episodes. While some bleeding may result from participation in a sport, healthcare providers and staff members of camps for children with hemophilia report that there are generally fewer bleeding episodes among children who are regularly active than among sedentary children. Of course, if your child regularly bleeds following a particular activity, you should rethink their participation in that activity.

At school, it's important that your child participate in physical education classes, even if some restrictions or modifications are necessary. Federal law requires that all children in public schools have the opportunity to participate in physical education, and most schools will accept a letter from the HTC director stating that the child can participate in particular activities. It can be helpful to have a supply of factor concentrate at school, so your child can be treated more quickly in case of a bleed. Children with bleeding disorders should also wear either a medical identification bracelet or necklace.



Sports and games are a part of childhood and the physical, social, and emotional benefits your child will gain should outweigh most of the concerns about his participation. In planning for your school-age child, evaluate each activity for an increased risk of bleeding. If the risk for major bleeding is minimal, you may want to let your child try that activity. Of course, a sport that is fun, exciting, and safe for younger children may be more dangerous as it becomes more competitive. Keep a long-range view, guiding your child toward activities he'll still be able to do when he gets older. And as your child grows, continually evaluate their choice of sports.

For Teens and Adults

If you were physically active as a child, it's likely you'll continue to stay active into your teen and adult years. As time passes, you may need to switch from one sport or activity to another. While learning a new sport may be harder for adults, many activities can be modified or equipment adapted to accommodate the changes in your musculoskeletal system. HTC staff, especially physical therapists, can also help design or adapt exercise programs to accommodate any muscle or joint problems you may have.

When choosing a sport or exercise, it is important for you to consider your general body build, past bleeding history, and present condition of your joints. You'll also want to think about how your joints respond to treatment. For example, if you've had recurrent ankle bleeds, jogging may not be for you. However, swimming could be a better alternative.

What about organized sports versus "pick-up" games? While pick-up games are usually less competitive, they are often not supervised and you may not have access to the proper safety gear. Though more demanding and physical, organized sports tend to be better supervised and use equipment that will protect you.

As you get older, some sports become more physical and possibly more dangerous. For example, soccer and basketball are often safe for young children because there is less contact, but these sports can result in serious knee and ankle injuries in teens and adults. Should you participate in these sports? It's a controversial question, particularly for teens and their parents who may still be involved in their healthcare decisions. One view is that prohibiting participation in any sport will eliminate the risk of injury. Another view is that refusing permission to participate might frustrate teens, making them less likely to cooperate with their parents and healthcare staff.

The decision to play certain sports should be made on an individual basis, weighing the strength of your child's desire to play, the social and emotional benefits of playing, and the real and potential risks.

For People with Mild or Moderate Bleeding Disorders

Because they usually bleed only after significant trauma, most people with mild bleeding disorders can participate in more vigorous activities. While sports-related bleeds are usually quickly detected in people with severe bleeding disorders, they may be less obvious in those with mild or moderate disease. And because people with mild bleeding disorders do not bleed as often, they may be less likely to recognize the warning signs of a bleed or they may not seek immediate treatment. They are also less likely to be on a home therapy program. Even when not severe, a single bleeding episode can trigger a cycle of recurrent bleeds into an affected joint, leading to permanent joint damage. Therefore, if your bleeding disorder is mild, it's still necessary that you learn the safest ways to participate in sports.

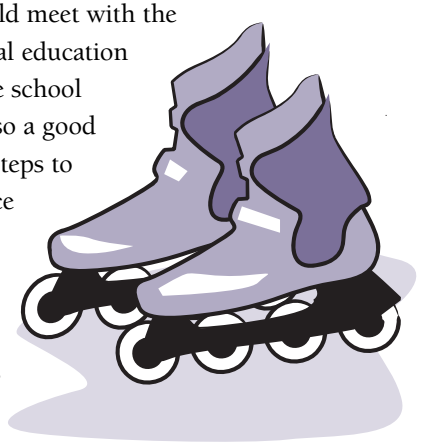
If you have a moderate bleeding disorder, the judgment about what sports or activities will be safe is usually made on the basis of your clinical history. If that history includes many bleeding episodes similar to someone with severe disease, sport choices will need to be more conservative.

Before You Start

Well in advance of starting a new activity, plan to meet with your HTC staff for an evaluation that includes a thorough musculoskeletal exam. Even if you have no specific problems, a training program prior to engaging in a sport can help. Professional and college athletes never participate in games without prior conditioning. Why should a person with a bleeding disorder take fewer precautions? It's especially important to plan in advance if you have specific muscles or joints that are weak, because eliminating those weaknesses will take time.

You'll also want to speak with HTC staff about the possibility of having a bleeding episode. It's important to know the early signs of a bleed, because delaying treatment could make a minor bleed more severe. All bleeding episodes should be treated immediately and with the appropriate medication. Your healthcare provider may recommend prophylactic factor replacement before certain activities to minimize your risk of bleeding.

For students involved in school-related athletic activities, there must be honest communication with school personnel about all aspects of your bleeding disorder. You and your parents should meet with the appropriate school staff, including the physical education teacher, the coach, the athletic trainer and the school nurse. Inviting HTC staff to the meeting is also a good idea. Together, you'll set up a plan outlining steps to take in the event you are injured or experience a bleed.



Conditioning

Once any specific muscle or joint weaknesses have been minimized, you should begin a general conditioning program. Conditioning will make you less likely to be injured. Your program should focus on the muscles you'll use and the level of endurance you'll need for the sport you've chosen. For example, a soccer player needs running endurance, a golfer less so. A total conditioning program includes:

- stretching for improving flexibility;
- the use of resistance equipment or weight training for increasing strength;
- aerobic training for improving endurance;
- practicing skills specific to the sport.

Overexertion can lead to injury, so take it slowly at the beginning and progress into the program over a period of three to four weeks. Be sure to include warm-up and cool-down periods in your conditioning program. Typically lasting about ten minutes, warm-ups consist of stretching the muscles you'll be using and performing some light activities similar to those you'll be doing in the sport itself. Warming up also gradually increases your heart rate. After your workout, cool down for ten minutes, stretching your muscles and gradually decreasing activity to allow your heart rate to return to normal.

Stretching

Stretching is one of the most important parts of your conditioning program, making your muscles more flexible and allowing your joints to move more freely.

Here are some important guidelines you can follow:

- Stretch slowly, holding each stretch for at least 30 seconds.
- Stretch to the point where you feel a steady pulling sensation, but no pain.
- Breathe regularly.
- Don't bounce; bouncing can damage your muscles.
- Gradually increase the number of repetitions and the duration of each stretch.

Your muscles may be sore after stretching, but soreness should subside within a day. If pain continues, decrease the intensity of your stretching.

If a bleed occurs, stop exercising immediately and start appropriate treatment. In the first 24-48 hours following a joint or muscle bleed, factor replacement is the most important step to stop bleeding. Always remember **R.I.C.E.,** a therapeutic method that can help you feel more comfortable and reduce swelling:

Rest	Rest the affected extremity, may use splints and crutches.
Ice	Apply ice packs or ice massage.
Compression	Use an Ace wrap™ or compression bandage.
Elevation	Elevate the arm or leg above the level of the heart as often as possible.

Consult with your HTC team prior to resuming any stretching program.

In Appendix 1, page 35, you'll find a basic program of stretching which focuses on all of the major muscle groups. You can use these stretches to warm up or cool down. A physical therapist can also help you develop additional stretches for a particular activity.

Strengthening

A gradual, well-designed program of regular exercise to increase your muscle strength is another important part of any conditioning program.

Normal muscle strength helps support your joints and makes it less likely that you'll be injured, and it helps you perform better. How do you know which muscles you need to strengthen? A physical therapist can do a muscle strength test that will tell you. The answer also depends on the activity you are conditioning for. For example, to ride a bike, you'll need strong quadriceps — the muscle on the front of your thigh.

As in stretching, if a bleed occurs, immediately stop exercising. Factor treatment should be started, followed by **R.I.C.E.** (rest, ice, compression and elevation).

Teens and adults with bleeding disorders often have questions about whether weight-training or power-lifting programs can help or harm their joints. Weight training builds strength by using increasing numbers of weights or repetitions, but it's very important not to put undue stress on your joints. To avoid injuring the growth plates of their bones, young teens should not lift heavy weights until they are past puberty. Power lifting is a competitive sport in which the contestant demonstrates maximum lifting ability through sudden, quick maneuvers. **Power lifting is NOT recommended for people with bleeding disorders.**

Following these guidelines can help you get the maximum benefit from a weight-training program, with the least amount of risk:

- **Goals**

  Set goals before beginning your program. These goals should be based on a physical evaluation that identifies any pre-existing musculoskeletal problems.

- **Facility**

  The best place to learn weight training is one that is well supervised by professionals experienced in exercise physiology and sports injuries. As a beginner, you'll learn more easily using resistance machines rather than free weights. Once you've mastered the proper technique on resistance machines, free weights can be safely introduced. Free weights provide the flexibility needed for a wide variety of movement. They can be geared for sport-specific training, and they help promote coordination.

- **Resistance training program**

  Begin resistance training only under the supervision of a therapist or trainer who can teach you the appropriate exercises and proper

technique. DO NOT apply resistance until you've seen the proper form demonstrated. DO NOT start with too much weight. A physical therapist or trainer can determine what amount of weight is right for you, based on the severity of your disorder and the condition of the muscles and joints you are training. If you have any joint degeneration, keep within a range of motion that is not painful for you. Begin with lighter weights and gradually increase the number of repetitions of each exercise.

Prior instruction in weight training technique is necessary in order to reduce injuries. Warm-up, stretching, and cool-down should always be part of your weight-training program. In addition, spotting (having another person there to watch and help you) and good breathing technique are also essential. Weight training can help you maintain muscle strength and prevent joint or muscle bleeding. For more recommendations about strength training, see Appendix 2, page 40.

Aerobic Training

Aerobic training is exercise that boosts your cardiovascular fitness and increases your endurance. It usually involves low to moderate exertion over extended time periods. Generally, aerobic programs begin with continuous exercise for at least 15 to 20 minutes, three times a week. By increasing how long you exercise and how often you exercise, you will gradually become more fit. You can swim, ride a bike, or walk without high risk of injuring your joints, and these activities will also strengthen your muscles.

In Appendix 3, page 42, you'll find more recommendations about aerobic training.

Measuring Your Effort

How hard your body is working during exercise depends on how much effort you are putting out. For example, slow walking is light activity, brisk walking is moderate, and jogging or running is vigorous. The three methods below are commonly used to measure how intensely a person is exercising:

1. The Talk Test

- If you can sing during exercise, you are working at light intensity.
- If you can talk but not sing during exercise, you are working at moderate intensity.
- If you have difficulty talking during exercise, you are working at vigorous intensity.

2. The Borg Rating of Perceived Exertion Scale

- Using the scale below, choose a number from 6 to 20 that best describes how hard you feel your body is working. To help you choose, think of slow walking as very light exercise (9). Exercise that is hard, but not so hard that you have to stop, would be rated 13. The most strenuous activity you've ever performed would be rated 19.

6	No exertion at all
7	Extremely light
8	
9	Very light
10	
11	Light
12	
13	Somewhat hard
14	
15	Hard (heavy)
16	
17	Very hard
18	
19	Extremely hard
20	Maximal exertion

3. Your Target Heart Rate

- Your heart rate speeds up when you exercise and slows down when you stop. To measure your heart rate, find your pulse by placing your index and middle fingers on the side of your neck below your jaw or on the inside of either wrist. Using a clock, count your pulse for ten seconds and multiply by six. The resulting number is your heart rate in beats per minute.

To condition your heart and lungs, you'll want to get your resting heart rate to your target heart rate zone. Your target zone depends on your age and your maximum heart rate. You can figure out your maximum heart rate by subtracting your age from 220. Your target zone will be from 60% to 75% of your maximum heart rate, depending on how far you have gone in your conditioning program.

Here are some examples:

If your age is	Your maximum heart rate is 220 minus your age, or	Your target zone is 60% to 75% of your maximum heart rate, or
15	205	123-154
35	185	111-138
50	170	102-127

After six months or more of a regular program, exercises can be done at up to 85% of the maximum heart rate. However, you do not have to exercise that hard to stay in good condition.

Set a comfortable workout pace and go slowly at first. If it takes longer than 15 minutes for your pulse to slow down after you stop exercising, or if you have trouble breathing or feel faint or weak, set a slower pace.

These guidelines are a good starting point for an aerobic training program. As you become more fit, you can add skills that are specific to particular sports. And before you begin any aerobic program, talk to your doctor or physical therapist.

Sports Safety and Instruction

Even if you're physically ready and in condition to participate in a sport, there's still one more thing you should think about: safety. You should have properly-fitted safety equipment specific to your sport. If you play on a field, it should be on an even surface, free of glass and other trash.

Other possible causes of sports injuries:

- Inadequate physical exams before participating
- Grouping teams by age instead of size
- Failure to warm up, stretch, and cool down
- Playing while hurt or tired
- Stress
- Playing on very hot or cold days
- Not eating properly
- Not drinking enough water

When you begin a sport, instructors or coaches should explain the basic ability level you'll need in order to play. They should suggest and explain conditioning exercises, including warm-up and cool-down periods, and tell you how to avoid injury. Ideally, coaches will be certified in CPR and first aid and understand how exercise affects the human body.

Choosing a Sport: What to Think About

Before you decide what sport or type of exercise is best for you, it's important to think about how often you will participate, where you've had bleeds and whether you have any joint or muscle problems. Other considerations include:

Your Age

For many young children, the risks of playing soccer, baseball, or basketball are greatly outweighed by the social pressures to participate in these activities. As children get older, they are more likely to want to participate in organized sports. While different activities tend to be popular for different age groups, some sports, like swimming, tennis, golf, and bike riding, are good choices for everyone. They also strengthen muscles and increase flexibility, which can help prevent future bleeding episodes.

Your Family Situation

Where you live affects the types of activities you are likely to consider. In some parts of the country, skiing is an everyday part of life. Riding a horse may be important if you live in the country, but less so in cities. You'll also want to think about the overall expense. Are the fees, costs of the equipment and instruction within your budget?

Your Current Activity Level

If you have not been active in a sport or exercise routine for a certain period of time, consult with your HTC team on the best way to start.

Safe or Dangerous?

No matter how well conditioned you are and no matter what level of instruction you've received, different activities carry different risks. Understanding these risks can help you make good choices about physical activity. In the table on the next two pages, you'll find activities rated from 1 to 3:

1	Safe
1.5	Safe to Moderate risk
2	Moderate risk
2.5	Moderate to dangerous risk
3	Dangerous

With the color coded table, you can easily see the level of risk involved in the particular activity you are considering. Levels one through two indicate that the benefits of these exercises or sports outweigh the associated risks. All sports that are rated 3 are not recommended for people with bleeding disorders. On the pages that follow, you'll find information regarding each activity listed in the chart.

Table 5. Sports Ratings by Activity

Activities have been divided into five ratings:

1	1.5	2	2.5	3
Safe	Safe to Moderate risk	Moderate risk	Moderate to dangerous risk	Dangerous

Activity	Category
Aerobics	2
Archery	1
Aquatics	1
Baseball	2.5
Basketball	2.5
Bicycling	1.5
BMX Racing	3
Bowling	2
Boxing	3
Canoeing	2.5
Cardiovascular Training Equipment	
Elliptical Machine	1
Rowing Machine	1.5
Ski machine	1.5
Stationary Bike	1
Stepper	2
Treadmill	1.5
Cheerleading	2.5
Circuit Training	1.5
Dance	2
Diving/Competitive	3
Diving/Recreational	2
Exercise Classes	
Body Sculpting	1.5
Cardio Kick-Boxing	2
Physioball	1.5
Spinning	1.5
Fishing	1
Football	3
Frisbee	1
Frisbee Golf	1.5
Ultimate Frisbee	2
Golf	1
Gymnastics	2.5
Hiking	1
Hockey (Field, Ice, Street)	3
Horseback Riding	2.5
Ice-Skating	2.5
Inline Skating	2.5
Jet Skiing	2.5
Jumping Rope	2
Kayaking	2.5
Lacrosse	3
Martial Arts – Karate/ Kung Fu/Tae Kwon Do	2.5
Martial Arts/Tai Chi	1
Motorcycling/ Motor Cross Racing	3
Mountain Biking	2.5
Pilates	1.5
Power Lifting	3
Racquetball	2.5
River Rafting	2.5
Rock Climbing (Indoor/Challenge Course)	2
Rock Climbing (Natural Setting)	3
Rodeo	3
Roller-skating	2
Rowing/Crew	2
Rugby	3
Running and Jogging	2
Scooter (motorized)	3
Scooter (non-motorized)	2.5
Scuba Diving	2.5
Skateboarding	2.5
Skiing/Cross Country	2
Skiing/Downhill	2.5
Skiing/Telemark	2.5
Snorkeling	1
Snowboarding	2.5
Snowmobiling	3
Soccer	2.5
Softball	2.5
Surfing	2.5
Swimming	1
T-Ball	2
Tennis	2
Track and Field	2.5
Trampoline	3
Volleyball	2.5
Walking	1
Water-skiing	2.5
Weight Lifting/Resistance Training	1.5
Weight Lifting/Power Lifting	3
Wrestling	3
Yoga	2

2 Aerobics

This form of exercise varies widely and may involve participation in a structured class or use of a home video or DVD. Equipment such as steps, springboards, light weights or elastic bands may be used.

1 Archery

Archery, or shooting with a bow and arrow, can be done individually or as part of a team, and recreationally or in competition. Properly fitted and maintained equipment is required, and safety precautions should be followed to reduce risk of injury. Beginning archers should wear long armguards to protect from string rebound.

1 Aquatics

Aquatics, or water exercises, provides ideal conditions for people of all ages and levels of fitness. Water allows people with weak arms or legs and damaged joints to move less painfully. Chest-high water provides support, allowing people to complete exercises more easily than on land. Water resistance can also be used to strengthen muscles, and there are devices available that increase water resistance for a more challenging workout.

2.5 Baseball

In this popular American sport, recreational and competitive teams are usually well organized and supervised. Risks include injury to the head, eye area, and chest as a result of being hit by the ball and joint trauma caused by sliding into base or colliding with other players. Players should use certified helmets with ear flaps on both sides, a chin strap, and eye protection. Padded chest protection and the use of softer baseballs may reduce the severity of injuries. Sliding and joint overuse due to pitching should be minimized or avoided. Playing the position of catcher presents additional risks of joint injury or trauma.

2.5 Basketball

Because of its popularity, most people who want to play basketball will do so despite the risk of significant joint and muscle trauma. The intensity of play varies from a casual game in the driveway to a highly competitive, organized game where heavy physical contact is the standard — a level not recommended for people with bleeding disorders. Protective equipment can be worn to protect eyes and joints, including high-top shoes or ankle supports.

1.5 Bicycling

Riders of all ages should use American National Standards Institute (ANSI) or Snell Memorial Foundation approved bicycle helmets. From tricycles to multispeed bicycles, riding is a good non-impact sport.

3 BMX Racing

This is a high-collision, competitive sport with potential for serious injury. It is **not recommended** for people with bleeding disorders.

2 Bowling

This sport may cause excessive strain to elbows and wrists.

3 Boxing

Boxing is a high-contact, high-collision sport with high risk for head and brain injury and death. It is **not recommended** for people with bleeding disorders.

2.5 Canoeing

The risk of canoeing varies widely depending on the classification of the water current. While canoeing in relatively calm water can be relaxing and enjoyable, it can also provide a strenuous aerobic workout. Fast white water increases the risk for capsizing, with potential for head trauma and drowning. A U.S. Coast Guard-approved life vest/personal flotation device and ANSI-certified helmet should be used.

Cardiovascular Training Equipment

The equipment available will vary in different settings, but exercise can generally be self-paced.

1 Elliptical Machine

This machine can be described as a cross between an exercise bike and a ski machine, with some treadmill and stepper attributes as well. Some have poles that provide an upper-body workout. Elliptical trainers provide a low-impact workout, lessening strain on the joints. They can provide a challenging cardiovascular workout.

1.5 Rowing Machine

Rowing machines offer the benefit of an all over workout with little impact on the joints. Proper use requires some degree of coordination and practice. In addition to the aerobic benefits, rowing machines can strengthen arm, back, shoulder, and abdominal muscles. Users should be aware of possible strain to the knees and lower back.

1.5 Ski Machine

Ski machines mimic the movement of traditional ski poles in cross-country skiing. Instead of skis, they have long, narrow boards or foot pads that glide on rollers. Without impact on the joints, they provide a total workout to the arms, legs, back, and abdomen.

1 Stationary Bike

Stationary bikes provide a good aerobic workout and don't require a lot of balance or coordination. Upright bikes position the legs below the body, while semi-recumbent or recumbent bikes place the legs slightly below heart level or directly in front of the hips, which allows for a reclined position. Some stationary bikes have dual-action levers for handlebars, which can be pulled back and forth to provide an upper body workout while pedaling.

2 Stepper

Steppers are excellent for exercising the major muscle groups of the lower body. The best steppers keep your feet on an even plane with the floor at all times, allowing natural foot movement. Accessories for the upper body can be added to provide a total body workout. Using proper form lessens strain on the knees.

1.5 Treadmill

Treadmills consist of a power or manually operated, continuous moving belt on which a person can walk or jog in place. Features vary widely; models may have shock-absorbing tracks, uphill grades, and preprogrammed workouts.

2.5 Cheerleading

Basic cheers and jumps present minimal risk. The risk for injury increases with pyramids, lifts and throws, especially in competitive squads. Proper spotting is essential to minimize risk, and aerial moves are not recommended.

1.5 Circuit Training

This form of strength training uses machines or other resistance, such as free weights or exercise bands. Exercises performed in a sequence with little rest between sets can qualify as cardiovascular as well as strength training. There is little risk when using proper technique. Please see Appendix 2, page 40 for age-appropriate guidelines.

2 Dance

Dance may involve participation in a structured class with an instructor. It can be done both for recreation and performance.

3 Diving, Competitive

A high-collision sport with potential for serious head and neck injury, competitive diving is **not recommended.**

2 Diving, Recreational

Supervised recreational diving off a low board is acceptable.

Exercise Classes

1.5 Body Sculpting

Classes generally combine cardiovascular and strength-training exercises to shape and tone the entire body. Equipment such as small handheld weights or resistance bands may be used. There are usually beginner to advanced level classes and participants can work out at their own pace.

2 Cardio Kickboxing

A popular trend in fitness programs, classes combine cardiovascular exercise with the agility, strength, balance, and coordination that can be achieved through martial arts training. Techniques range from easy to hard, with low impact to high impact movements and no contact to full contact. Full contact, high impact is not recommended.

1.5 Physioball

This class uses a ball to strengthen abdominal and lower back muscles, improve balance, and add variety and challenge to exercise regimens.

1.5 Spinning

Spinning is like an indoor group ride on stationary bicycles led by an instructor. Bikes are arranged so that each participant can see the instructor. The workout can include sprints, slower pedaling, and added resistance to simulate hills.

1 Fishing

A relaxing activity for any age, fishing involves little risk.

3 Football

Football is a high-contact, high-collision sport with potential for serious traumatic injury to the head, neck, spine, and extremities. It is **not recommended** for people with bleeding disorders.

1 Frisbee

Whether recreational or competitive, this level of Frisbee involves little risk. It involves sailing a lightweight plastic disk with a flip of the wrist.

1.5 Frisbee Golf

Played for recreation and also competitively, the object of the game is to throw the disk into the target in the fewest number of throws.

2 Ultimate Frisbee

Although this game combines elements from football, soccer and basketball, it is a non-contact team sport. It can be played recreationally or in competition.

1 Golf

Golf is a low-impact, lifetime sport that provides a good workout for those who walk the course rather than use a cart. Expense and access to a course are limiting factors.

2.5 Gymnastics

There is a risk for head trauma and intracranial bleeding with high equipment, such as rings and uneven bars. In a well-supervised setting that includes proper instruction and good spotting, this sport is acceptable for people who do not have significant musculoskeletal damage. Risk for injury increases with jumping dismounts and aerial skills, especially for those on competitive teams.

1 Hiking

Hiking can be done almost anywhere at any time and requires only good hiking boots or shoes. Aerobic effort, impact, and muscular workout increase with more challenging terrain. Hiking can be a good social experience when done in groups, and it is an excellent lifetime activity.

3 Hockey, Field/Ice/Street

All types of hockey are high-contact, high-collision sports that involve potential for serious traumatic injury to the head, neck, spine, and extremities. Hockey is **not recommended** for people with bleeding disorders.

2.5 Horseback Riding

This activity carries significant risks because major falls with trauma to the head and spine are not uncommon. However, in certain geographic areas it may be necessary as a form of transportation. A hard, well-fitting, American Society for Testing and Materials (ASTM)-certified helmet should always be worn. Jumping should be discouraged.

2.5 Ice Skating

The greatest risk is falling on the ice and hitting the head or breaking a bone. There is a common misconception that weak ankles make skating difficult. Well-fitted, good quality skates with rigid ankle support eliminate this concern.

2.5 Inline Skating

Inline skating appeals to all age groups. It can be an excellent aerobic workout but is not without risks. A helmet and protective pads for elbows, knees, and wrists should be worn. The risk of injury increases with aerial skills and competitive participation.

2.5 Jet-Skiing

This activity carries significant risks for anyone who participates, because a major accident can result in serious traumatic injuries. A U.S. Coast Guard-approved life vest or personal flotation device is required.

2 Jumping Rope

An excellent form of cardiovascular exercise, jumping rope can provide a vigorous workout. The impact of this activity may cause stress to the ankle joints.

2.5 Kayaking

As in canoeing, there is a wide range of risk that varies with the classification of the water current. Participating in this activity in relatively calm water can be relaxing and enjoyable or can provide a strenuous aerobic workout. Fast white water increases the risk for capsizing, with potential for head trauma and drowning. A U.S. Coast Guard-approved life vest/personal flotation device and ANSI-certified helmet should be used.

3 Lacrosse

Lacrosse is a high-contact, high-collision sport with potential for serious traumatic injury to the head, neck, spine, and extremities. It is **not recommended** for people with bleeding disorders.

2.5 Martial Arts (Karate, Kung Fu, or Tae Kwon Do)

Studying any of these forms under the supervision of a qualified instructor can provide good physical conditioning. Practicing the precise movements, including strikes, punches, blocks and kicks, in a disciplined manner is acceptable. Competitive fighting, high contact, and breaking objects are not recommended.

1 Martial Arts (Tai Chi)

The emphasis on slower movements, breathing, and meditation makes this activity appropriate for anyone.

3 Motorcycling/Motocross Racing

This is a high-collision activity with potential for serious traumatic injury. Extremely dangerous for anyone, it is **not recommended.**

2.5 Mountain Biking

As with regular biking, ANSI- or Snell-certified helmets are absolutely essential. Additional safety equipment may include elbow pads and shin guards. Risk involves falls and collisions with obstacles, due to the rough, uneven terrain. By acting as shock absorbers, elbows may experience increased pressure.

1.5 Pilates

A form of strength training that may include mat- or equipment-based exercise. Pilates strengthens the trunk muscles. It carries little risk, if properly performed.

3 Power Lifting

Power lifting is a competitive sport in which contestants demonstrate maximum lifting ability through sudden, quick maneuvers. It is **not recommended** for people with bleeding disorders.

2.5 Racquetball

In this high-collision sport, there is a high risk for eye and head injury. Rapidly swinging limbs, hard racquets, high-velocity balls, and close quarters make for frequent injuries.

2.5 River Rafting

Rafting should be done with reputable companies that are very familiar with the river. There is a wide range of risk with this activity based on classification of water current. Participating in this activity in relatively calm water can be relaxing and enjoyable or can provide a strenuous aerobic workout. Fast white water increases the risk for capsizing, with potential for head trauma and drowning. An ANSI-certified helmet and U.S. Coast Guard-approved life vest/personal flotation device are mandatory.

2 Rock Climbing (Indoor or Challenge Course)

Rock climbing uses ropes and harnesses and requires good strength and good range of motion in all joints. The primary risk of this sport is falling. Climbing on indoor walls and challenge courses with proper instruction and supervision may provide a safer environment for experiencing the sport of rock climbing.

3 Rock Climbing (Natural Setting)

Rock climbing in natural settings increases the risk because of the potential for falls that cause serious trauma and life-threatening injury. Rock climbing in natural settings is **not recommended** for people with bleeding disorders.

3 Rodeo

In this high-collision, high-contact activity, there is potential for serious traumatic injury to the head, neck, spine, and extremities. Rodeo is **not recommended** for people with bleeding disorders.

2 Roller-Skating

Similar to inline skating, roller-skating appeals to all age groups. It can be an excellent aerobic workout, but is not without risks. A helmet and protective pads for elbows, knees, and wrists are recommended.

2 Rowing/Crew

Rowing provides an excellent total-body, non-impact aerobic workout, even when done on rowing machines. Movement can be modified to accommodate joints that lack full range of motion. Proper position and use of the back is important to prevent injury.

3 Rugby

Rugby is a high-contact, high-collision sport with potential for serious traumatic injury to the head, neck, spine, and extremities. It is **not recommended** for people with bleeding disorders.

2 Running/Jogging

These activities cause high impact to weight-bearing joints, which may increase the number of bleeds and contribute to severity of joint disease. Some people with bleeding disorders are still able to jog successfully.

3 Scooter (Motorized)

Riding a motorized scooter is a high-collision activity with potential for serious traumatic injury. It is a dangerous activity for anyone and **not recommended.**

2.5 Scooter (Non-Motorized)

Non-motorized scooters can provide an excellent aerobic workout but they are not without risk. Riders should wear certified helmets and protective pads for elbows, knees, and wrists.

2.5 Scuba Diving

This activity carries inherent risks that relate to the depth of the water and the need for proper maintenance of equipment and oxygen supply. Instruction is imperative, and certification is necessary in the United States. Scuba diving provides excellent musculoskeletal strengthening and cardiovascular conditioning, without stress to the joints.

2.5 Skateboarding

Skateboarding can be an excellent aerobic workout but is not without risks. A certified helmet and protective pads for elbows, knees, and wrists should be worn. The risk of injury increases with aerial skills and competitive participation.

2 Skiing (Cross-Country)

Because of slower speed, injuries are usually less serious than those seen in downhill skiing. There is also less chance of colliding with another skier. This activity may also be performed on an indoor cross-country ski machine. It is an excellent aerobic, lifetime activity.

2.5 Skiing (Downhill)

Properly fitting equipment and a helmet are essential. There is a risk of fractures and injury to joints, ligaments, and head from falls or collisions with trees or other skiers. Moguls, aerial skills, and jumps carry increased risk and are not recommended.

2.5 Skiing (Telemark)

This type of skiing, which may be done cross-country or downhill, causes repetitive stress to the knees.

1 Snorkeling

This low-impact recreational activity provides excellent musculoskeletal strengthening and cardiovascular conditioning, without stress to the joints. A U.S. Coast Guard-approved life vest or personal flotation device is mandatory.

2.5 Snowboarding

This activity requires excellent lower-extremity and abdominal strength. A protective helmet is essential. Risks are similar to those in downhill skiing.

3 Snowmobiling

Snowmobiling is a high-collision activity with potential for serious traumatic injury. It is more dangerous in high-traffic areas. It is **not recommended** for people with bleeding disorders.

2.5 Soccer

Children often participate in supervised soccer games beginning at very early ages. At older levels, games become more competitive, resulting in higher contact and risk of injury. "Heading" the ball should be discouraged because of the risk of bleeding in the head and face. Shin guards should be worn. Playing goalie increases the risk of trauma.

2.5 Softball

Recreational and competitive teams are usually well organized and supervised. Risks include injury to the head, eye area, and chest as a result of being hit by the ball, and joint trauma caused by sliding into base or colliding with other players. Certified helmets with ear flaps on both sides, a chin strap, and eye protection should be required. Padded chest protection and the use of softer baseballs may reduce the severity of injuries. Sliding and joint overuse due to pitching should be minimized or avoided. There may be additional risks of joint injury or trauma when playing the position of catcher.

2.5 Surfing

This activity carries significant risks for anyone who participates. It can be stressful to the muscles and joints of the lower extremities. A major accident can result in serious injury. A U.S. Coast Guard-approved life vest or personal flotation device is recommended.

1 Swimming

An important low-impact sport, swimming provides excellent musculoskeletal strengthening and cardiovascular conditioning. Proper technique will minimize the risk for repetitive stress injury. It is an activity that can be continued throughout life.

2 T-Ball

Recreational and competitive teams are usually well organized and supervised. Risks of the sport include injury to the head, eye area and chest as a result of being hit by the ball, and joint trauma caused by sliding into base or colliding with other players. Certified helmets with ear flaps on both sides, a chin strap and eye protection should be required. Padded chest protection and the use of softer baseballs may reduce the severity of injuries. Sliding and joint overuse due to pitching should be minimized or avoided. There may be additional risks of joint injury or trauma when playing the position of catcher.

2 Tennis

There is little risk involved in tennis, but it may be stressful to the shoulder and elbow joints. Proper grip and form are important to reduce injury. This activity can be enjoyed at any age.

2.5 Track and Field

Track and field includes many different events, which will be more or less appropriate, depending on the person's joint limitations. Specific event choices should be discussed with the HTC team.

3 Trampoline

The trampoline is a dangerous piece of equipment that is **not recommended.** Risks include injury or death due to colliding with another person, landing improperly while jumping or doing stunts, falling, or jumping off. The American Academy of Pediatrics recommends that trampolines should not be used at home, either indoors or outdoors. Their policy also recommends that trampolines should not be part of routine physical education classes in schools, have no place in outdoor playgrounds, and should never be regarded as play equipment.

2.5 Volleyball

The risk of injury increases when volleyball games become highly competitive.

1 Walking

Whether slow and steady or brisk, walking is an excellent aerobic activity that can be done indoors at malls, outdoors, and on varied terrain. It is also a good social experience when done in groups and is a great lifespan activity.

2.5 Water-Skiing

This activity carries significant risks for anyone who participates. It can be stressful to the muscles and joints of the lower extremities and to the elbows and shoulders. A major accident can result in serious traumatic injuries. A U.S. Coast Guard-approved life vest or personal flotation device is required.

1.5 Weight Lifting/Resistance Training

Lifting heavy weights is not recommended for growing children because stress to the growth plates of bones may cause early closure. Lifting lighter weights with more repetitions is recommended and will increase strength and endurance. This exercise frequently improves body image and self-confidence.

3 Weight Lifting/Power Lifting

Power lifting refers to the competitive sport in which the contestant demonstrates maximum lifting ability through sudden, quick maneuvers. It is **not recommended** for people with bleeding disorders.

3 Wrestling

Wrestling is a high-contact, high-collision sport with potential for serious injury to the head, neck, spine, and extremities. It is **not recommended** for people with bleeding disorders.

2 Yoga

Yoga is a form of flexibility and strength training that varies widely and may include mat- or equipment-based exercise. Yoga may involve participation in a structured class or use of a home video or DVD. Proper technique is important to minimize risk of injury.

Continuing in Sports and Exercise After Bleeding Episodes

There are no standard guidelines about returning to sports or exercise after a bleeding episode. Each person's situation is unique, and the decision may require consulting with the HTC staff. Some people's muscles and joints may require longer periods of recuperation and possibly a period of rehabilitation before playing competitively again. Bleeding episodes that resolve with a single treatment and do not interfere with normal daily activities should cause no increased concern. However, bleeding episodes that require multiple treatments, forced bed rest, or leave the joints or muscles feeling stiff are signs that the HTC staff should be consulted before resuming sports or exercise.

If bleeding continues to occur in the same joint or muscle, the normal healing mechanisms of the body risk being interrupted leading to permanent joint or muscle damage. A cycle of frequent bleeding can cause you to remain inactive for periods of time, thereby limiting future participation in sports.

Summing It Up: Prepare Yourself, Choose Wisely…and Have Fun!

People with bleeding disorders should be strongly encouraged to participate in exercise and sports activities. Six points are worth emphasizing:

1. People with bleeding disorders have a defect in their coagulation system. Frequent bruising is a part of their lives that cannot be avoided. For those with severe disease, bleeding into joints or muscles can occur even with little or no trauma.
2. Parents must strive for a healthy attitude toward their child's participation in physical activities. It is important that parents provide a safe environment in which their child can grow and develop normally, which includes participation in athletic activities. In general, inactive, overprotected children have more frequent, spontaneous bleeding. A more self-confident, independent lifestyle usually brings marked clinical improvement and fewer spontaneous bleeding episodes.

3. Children choose sports for excitement, friendship, and competition. One of the biggest obstacles to their participation may be their parents' fear of injury. Parents should address these concerns by talking with their children about risks and precautions, and they should make sure that children use the appropriate safety equipment.

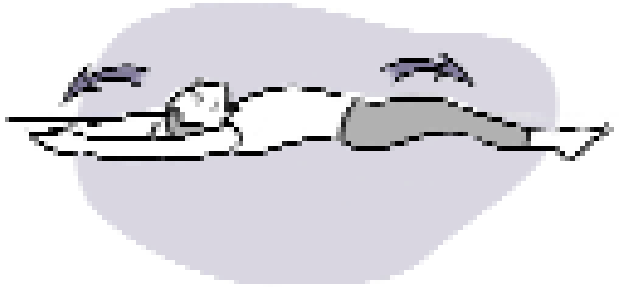
4. Honest and open communication between people with bleeding disorders, their parents, the HTC team, school personnel and coaches is vital. If injuries occur, people should always receive early and appropriate treatment.

5. It is important that people with a bleeding disorder be physically fit. Joints that are supported by well-developed muscles are better able to withstand the traumas of daily living. Stretching, strengthening, cardiovascular training, and sports participation are all ways to achieve fitness.

6. There are many benefits to participating in sports and exercise. Starting at an early age can build a strong routine that will be beneficial throughout life.

Appendix 1

General Stretching Program



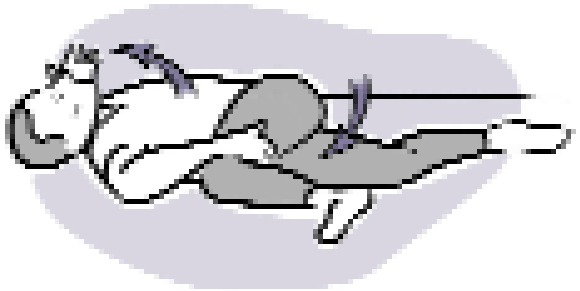
Full Body Stretch

- Lie on the floor with arms overhead and legs straight.
- Reach as far as possible in opposite directions with arms and legs.
- Hold 30 seconds, then relax.
- Stretch should be felt along entire body.

Knee to Chest

- Lie on the floor with legs straight.
- Bring one knee toward chest.
- Use hands on shin or back of thigh to provide gentle pressure.
- Hold 30 seconds, then lower leg.
- Repeat with lower leg.
- Stretch should be felt along lower back and buttocks.

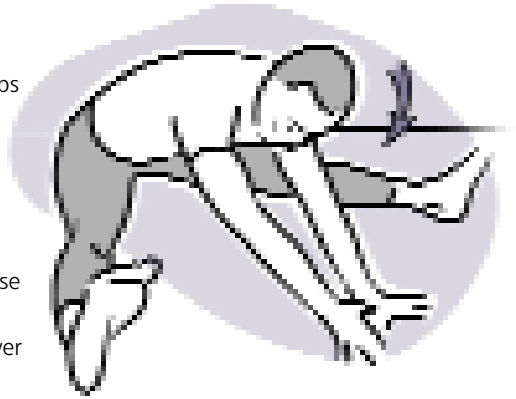
Trunk Rotation

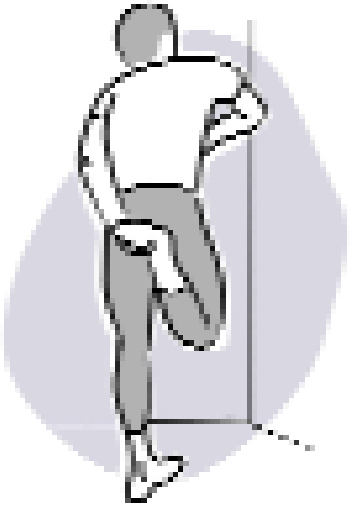


- Lie on the floor with legs straight.
- Bend left knee up and using right hand, pull leg across body.
- Keep shoulders on the floor.
- Hold 30 seconds, then relax.
- Repeat with other leg.
- Stretch should be felt in lower back and side of hip.

Saddle Stretch

- Sit with legs straight in a V pattern.
- Lean forward by pressing hips forward, not rounding upper back.
- Keep knees facing up.
- Use hands and arms for support, if necessary.
- Hold 30 seconds, then release by sitting up.
- Stretch should be felt in lower back and inner thighs.





Quad Stretch

- Stand facing a wall; balance with one hand on wall.
- Bend one knee behind and grasp foot with either hand.
- Gently pull foot toward buttock while keeping the hip extended. Do not let hip flex forward.
- Hold 30 seconds, then relax.
- Repeat with opposite leg.
- Stretch should be felt along front of thigh and ankle.

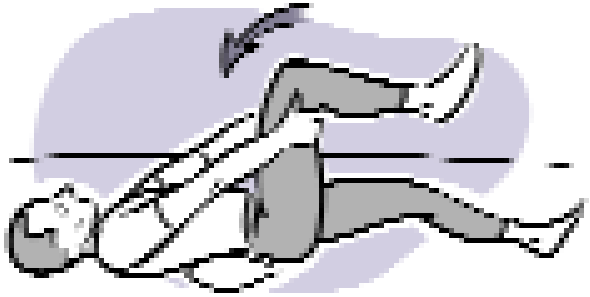
Runner's Lunge

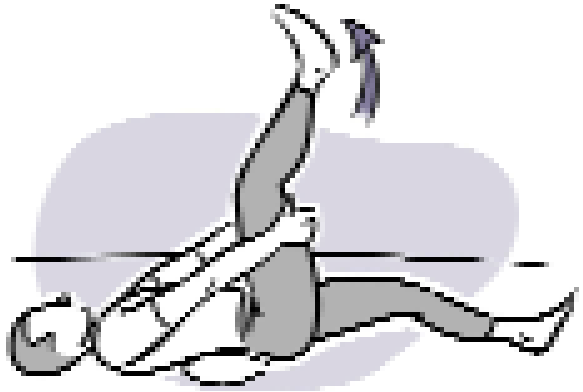
- Stand with one leg in front of the other with feet pointing forward.
- Keep front heel on the floor; let back heel off the floor.
- Lean forward onto front leg, keeping back knee straight.
- Use hands on front thigh or floor depending on flexibility.
- Hold 30 seconds, then relax.
- Stretch should be felt along groin, hamstrings, and front of hip.

**be extra gentle if there is a history of iliopsoas bleeds.*

Hamstring Stretch

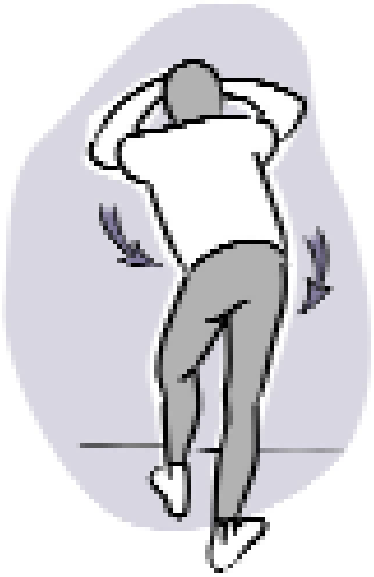
- Lie on back.
- Grasp right thigh with hands.
- Try to straighten knee.
- Do *not* move hips.
- Hold 30 seconds.
- Repeat with other leg.
- Stretch is felt in back of thigh.





Calf Stretch

- Stand facing wall with one foot in front of the other, feet straight.
- Lean toward wall bending front knee, keeping back knee straight and keeping back heel on the floor.
- Hold 30 seconds, then stand and relax.
- Repeat with other leg forward.
- Stretch should be felt along the back and the calf.

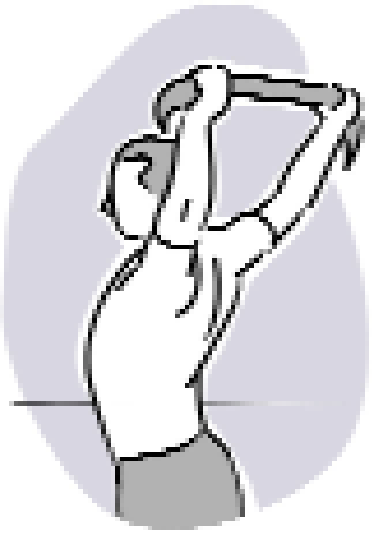


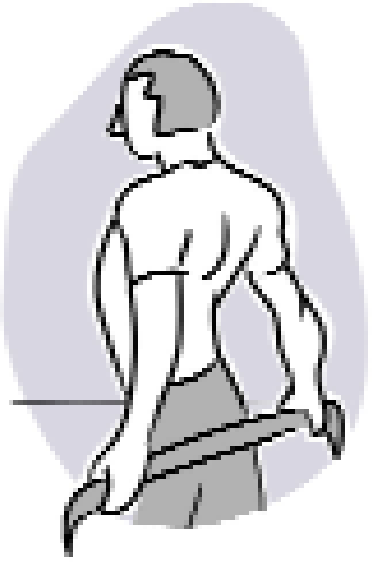
Hip Stretch

- Stand in same position as for the calf stretch, left foot forward.
- Lean into right hip, keeping both feet on the floor.
- Hold 30 seconds, then stand and relax.
- Repeat to left side with right foot forward.
- Stretch should be felt along the side of the trunk, hip, and upper leg.

Upper Chest Stretch

- Grasp towel or rod at the ends (sitting or standing).
- Lift towel over and slightly behind head.
- Hold 30 seconds, then lower forward to relax.
- Stretch should be felt along front of upper chest and shoulders.



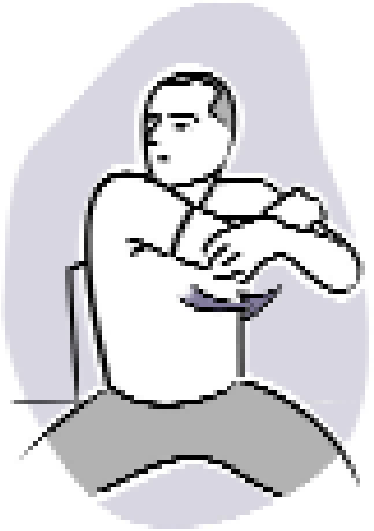


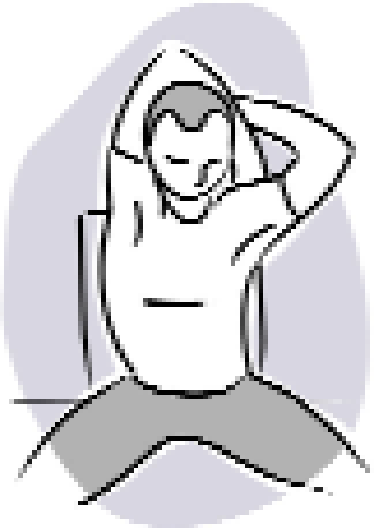
Front Shoulder Stretch

- Grasp towel or rod behind back, below shoulders (standing or sitting in backless chair).
- Lift arms back away from body.
- Hold 30 seconds, then lower to relax.
- Stretch should be felt in the front of shoulders.

Back Shoulder Stretch

- Reach one arm across chest at shoulder level (sitting or standing).
- Use opposite arm to provide gentle pressure at elbow.
- Turn head to look over shoulder being stretched.
- Hold 30 seconds, then relax.
- Repeat to opposite side.
- Stretch should be felt across upper back and shoulders.





Side Trunk Stretch

- Reach one arm over and behind head (sitting or standing).
- Use opposite hand at elbow to provide gentle pressure.
- Hold 30 seconds, then relax.
- Repeat with the opposite arm.
- Stretch should be felt along the side of trunk and shoulders.

Appendix 2 Strength Training Recommendations*

Programs generally consist of one to three sets of each exercise for 6 to 15 repetitions. After the individual has done 15 repetitions in good form, weight resistance can be increased in one to three pound increments. Training should be done for 20 to 30 minutes, two to three times a week, always resting the body on the day following the workout.

	Child/Adolescent	Adult	Older Adult
Frequency	1-2x/week, then encourage other forms of activity	2-3x/week	2-3x/week with 48 hour rest between sessions
Duration	1-2 sets of 8-10 different exercises involving all major muscle groups	1-5 sets involving all major muscle groups	1-2 sets involving all major muscle groups for 30 minutes/ usually 1-2 exercises for each muscle group
Intensity	1. Amount of weight should be (a) light enough to allow completion of 8-10 reps/set using good form through full joint motion and with normal breathing and (b) heavy enough that the last few repetitions are difficult to complete. 2. Avoid lifting maximal amount of weight possible. 3. Rest 1-3 minutes between sets.	1. Amount of weight should be (a) light enough to allow completion of 8-12 reps/set using good form through full joint motion and with normal breathing and (b) heavy enough that the last few repetitions are difficult to complete. 2. Rest 1-3 minutes between sets.	1. Amount of weight should be (a) light enough to allow completion of 10-15 reps/set using good form through full joint motion and with normal breathing and (b) heavy enough that the last few repetitions are difficult to complete. 2. Rest 1-3 minutes between sets.
Progression	1. Vary program by modifying frequency, duration, amount of weight, # of reps, # of sets (< or = 2 sets), # of exercises/muscle group. 2. When muscles are not tired after 1-2 sets of 8-10 reps, increase weight to next higher level. 3. When muscles cannot complete 8-10 reps, decrease weight.	1. Vary program by modifying frequency, duration, amount of weight, # of reps, # of sets (< or = 5 sets), # of exercises/muscle group. 2. When muscles are not tired after 2-3 sets of 8-12 reps, increase weight to next higher level. 3. When muscles cannot complete 2 sets of 8-12 reps, decrease weight.	1. Vary program by modifying frequency, duration, amount of weight, # of reps, # of sets (< or = 3 sets), # of exercises/muscle group. 2. When muscles are not tired after 2-3 sets of 10-15 reps, increase weight to next higher level. 3. When muscles cannot complete 2 sets of 10-15 reps, decrease weight.
Precautions	1. Monitor form 2. Monitor amount of weight used 3. Use a spotter when possible. 4. Stop exercise in presence of pain. Check posture/position and try to exercise again. If it is still painful, discontinue that exercise and seek assistance from the HTC or your physical therapist. 5. Do not lift weights with any joint or muscle that is currently bleeding. After bleed resolution, resume lifting gradually with decreased weight and # of reps and/or sets. 6. Remember that a child or teen has not reached physiological maturity. 7. Do not exercise if you feel ill or overly fatigued.	1. Monitor form 2. Monitor amount of weight used 3. Use a spotter when possible. 4. Stop exercise in presence of pain. Check posture/position and try to exercise again. If it is still painful, discontinue that exercise and seek assistance from the HTC or your physical therapist. 5. Do not lift weights with any joint or muscle that is currently bleeding. After bleed resolution, resume lifting gradually with decreased weight and # of reps and/or sets. 6. Do not exercise if you feel ill or overly fatigued.	1. Monitor form 2. Monitor amount of weight used 3. Use a spotter when possible. 4. Stop exercise in presence of pain. Check posture/position and try exercise again. If it is still painful, discontinue that exercise and seek assistance from the HTC or your physical therapist. 5. Do not lift weights with any joint or muscle that is currently bleeding. After bleed resolution, resume lifting gradually with decreased weight and # of reps and/or sets. 6. Do not exercise if you feel ill or overly fatigued.

*American College of Sports Medicine/Centers for Disease Control and Prevention

Appendix 3 Cardiovascular Activity Recommendations*

	Child/Adolescent (2-18 years)	Adult
Frequency/ Duration/ Intensity	**1.** 30 minutes of enjoyable and moderate intensity level activities daily. **2.** 30 minutes of vigorous physical activity 3-4/week **3.** Activity time can be divided into shorter time periods; e.g., 15 minutes at morning recess and 15 minutes after school.	**1.** At least 30 minutes of moderate intensity activities on most days of the week. **2.** Increasing time and intensity of activities will provide greater health benefits. **3.** At least 30-60 minutes of aerobic activity 5x/week is usually required for weight loss.
Precautions	Progressing to a vigorous level activity may increase the likelihood of injury or joint bleed, especially if the body is not adequately trained or if the activity places stress on a target joint.	Progressing to a vigorous level activity may increase the likelihood of injury or joint bleed, especially if the body is not adequately trained or if the activity places stress on a target joint.
Progression (CDC)	*If...* **1.** You are now inactive **2.** If you are now active, but below the recommended activity levels **3.** If you are now participating in at least moderate intensity level activities 5x/week,	*Then…* **1.** Add a few minutes of moderate intensity level activities daily until you gradually work up to 30 minutes or more. **2.** Work up to 30 minutes of moderate intensity level activities for at least 5x/week OR work up to at least 20 minutes of vigorous intensity activity for at least 3x/week **3.** Greater health benefits are possible by increasing the intensity and/or frequency of activities.

*American College of Sports Medicine/American Heart Association/ Centers for Disease Control and Prevention

Additional Resources

Articles from *HēmAware* published by the National Hemophilia Foundation:

"Pump Up for Prevention" by Alice Anderson, PT, MS, PCS, November/December 2001
"Exercise Mentoring: The Motivation to Get Moving" by Wayne Richards, MSW, LCSW, July/August 2002
"Playing to Win: Preventing Common Sports-Related Injuries" by Marvin Gilbert, MD and Irene Vlaskamp, PT, May/June 2003
"Strength Training Guidelines for Children, Adolescents and Adults with Bleeding Disorders" by Kris Albrecht, PT, PCS, May/June 2003
"Exercise Heals" by Ann Conti Morcos, MA, ELS, May/June 2003
"Aquatic Therapy: It's Not Just Swimming," by Grace Hernandez, PT, May/June 2003
"Bench Warmer" by Jeffrey Kallberg, PT, March/April 2004

Peter Jones, MD, Brenda Buzzard, MCSP and Lily Heijnen, MD, *Go for It: Guidance on Physical Activity and Sports for People with Haemophilia and Related Disorders.* World Federation of Hemophilia, 1998.

The National Hemophilia Foundation is dedicated to finding better treatments and cures for bleeding and clotting disorders and to preventing the complications of these disorders through education, advocacy and research.

Established in 1948, the National Hemophilia Foundation is a non profit 501(c)3 organization with chapters throughout the country. Its programs and initiatives are made possible through the generosity of individuals, corporations and foundations as well as through a cooperative agreement with the Centers for Disease Control and Prevention (CDC).

For more information or for help, please call the organization's information resource center at 800.42.HANDI, ext. 2 or go to www.hemophilia.org.

NATIONAL HEMOPHILIA FOUNDATION
for all bleeding and clotting disorders

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