ATHLETE 101

Sweat City Fitness’ mission is to provide young athletes with the tools to maximize their potential on and off the field. Founded and operated by former NCAA Division One athletes, we have years of experience and knowledge in world-class training philosophies.

Our trademarked Xplosive Functional Training (XFT) System focuses on proper body mechanics and functional movement to allow athletes to maximize their potential. We emphasize speed, power, and explosive movement to train our athletes to play fast, strong, and with confidence.

We thoroughly evaluate each team/athlete’s strengths and weaknesses and customize our training program accordingly. We identify mechanical flaws and inefficiencies not only to improve athleticism but to prevent injury. Injury prevention is our #1 concern!

Thank you for allowing your athletes to reach their potential with us. As we say here at Sweat City, “You can get fast or get left behind!”

Please contact us regarding our Summer Camps and Private 1-on-1 or Small Group Trainings!

Sweat City Fitness
Chris Chinn | President
chris@sweatcityfitness.com
650-759-2390
www.sweatcityfitness.com
**Acceleration Mechanics and Developing an Explosive First Step**

1.) When accelerating, an athlete should have about a 35–45 degree upper body lean forward to maximize his/her leverage. This applies any time we are changing directions or stop-and-going. Emphasize how important this lean is whenever we are starting to run in a direction.

2.) **Drive off the balls of the feet** to generate as much force into the ground as possible. The more force into the ground, the more explosive we become (see drills below)

3.) **Throw your back knee forward** as violently as possible to jump start your leg cycle and drive momentum forward. Knee drive should be about waist-high for the first 5-10 yards of acceleration. The number one thing we yell as trainers is to “Get those knees up!!!”

4.) The push-off leg should achieve "triple extension", with the hip, knee, and ankle all fully extended to maximize explosiveness. In the picture below, the sprinter’s back leg is an example of near-perfect triple extension.

![Sprinter](image)

**Proper Arm Mechanics When Running**

1.) To run efficiently, **keep arms parallel to each other** when running (not crossing in front of the body or rotating outwards). This is to prevent unnecessary twisting of the upper body, which is wasted energy and movement. The more still our upper body remains, the more efficient we are as runners.

2.) Arms should be **bent approximately 90 degrees** at the elbow when running. Do not bend and straighten arms back and forth! Movement comes from the shoulders and should be loose and fluid.

3.) **Hands should not go past our cheek or our butt** (we call this cheek-to-cheek), otherwise we are wasting motion. The exception is in the first few steps where we are exaggerating our arm motion to generate power.

![Runner](image)
Agility and Footwork

Agility refers to the ability to quickly change the direction of the body without losing balance. It is dependant on a combination of factors such as speed, strength, balance and coordination.

Key coaching points to remember when teaching agility are to stay on the balls of the feet, keep the hips low to the ground (by bending knees in a wide stance), and lean the upper body in the direction you want to go.

Every turn, every cut is different. Some cuts don’t require us to change direction and lose speed as much as other cuts do. When we have a cut that requires us to completely change direction at a high speed, the most important thing to remember is to use our inside leg as the primary decelerator. The outside leg needs to finish the deceleration and begin the push into the acceleration phase in the new direction. However, take note that if we put too much force on the outside leg to decelerate, we run the risk of knee or ankle injury.

Agility and footwork, more so than any other skills, are reliant upon repetition. The more times you perform a drill, the more efficient you will become with it. For this reason, we advise incorporating cone drills, hurdle footwork, and speed ladders into your training regimen at least once a week.

Once an athlete has mastered these drills, have them keep their eyes up off the ground and rely on their muscle memory to make the correct steps. An athlete needs to be able to trust his or her feet without having to lose focus on everything else that’s happening around them.

After the athlete has perfected the placement and accuracy of their footwork, the next progression is to speed up their feet. Repeat drills over and over while racing against your personal best times. Repetition, repetition, repetition!
Increasing Jumping Ability and Power

Athletes like LeBron James, Dwight Howard, and Calvin Johnson are changing the landscape of sports. The ability to elevate over opponents has added a new dimension to sports like basketball, volleyball, football, and even soccer. Furthermore, college and professional scouts are putting increasing value on an athlete's measurables-vertical/broad jump, 40 yd dash, etc. Wouldn't you at least consider giving some attention to a kid with a 40-inch vertical jump?

As experienced jump trainers, we wanted to share a few of our strategies for increasing power and explosiveness in your jumping ability.

Build More Elastic Energy: Plyometrics

Plyometric training is the best way to improve the elasticity in your jumping ability. Plyometrics involve a series of rapid, consecutive jumps that emphasize the ability to rebound from one jump to the next. It is important to minimize the time you spend in contact with the ground from the landing of one jump to the take off of the next. The goal of plyometrics is to train your muscles to contract as powerfully as possible.

The simplest and most effective plyometric drill is the Depth Jump. To perform this exercise, you need any elevated platform like a chair, bench, or box that is 2-3 feet high. The athlete begins on top of this platform and then steps (not jumps) off. The focus is for the athlete to land and jump upwards as high as they can. Most importantly, they should concentrate on minimizing the time it takes to jump after hitting the ground. Think of the ground as a trampoline! Repeat this 6-10 times. If you have multiple platforms or plyo boxes, you can set them up in a line so the athlete can jump up onto the next platform and do multiple depth jumps in the same repetition.

Jump for Power, not for Endurance

This is the #1 mistake most jump programs make. While building endurance in our legs is important throughout the course of a game and a season, we need to train for power if we want to increase our vertical. What this means is that rather than jumping for 20-30 times in a row, we should be aiming for no more than 10 jumps in a row before taking a break. To take this concept of power training even further, try jumping with adding weight to overload the legs. This can be done with medicine balls, weight vests, or just by holding dumbbells-10 lbs is plenty.

Change the Way You Lift
Loading your legs with heavy weight is a great way to improve strength in your quads, glutes, hamstrings, and calves. My personal favorites are leg press and back squats. If you don't have access to a weight room, an alternative would be walking lunges while holding dumbbells.

With these lifts, it's important to focus on explosiveness. Each time you are pushing the weight, you need to lift as explosively as possible to recruit your fast-twitch muscle fibers. Just as important, when you are bringing the weight back down for another repetition, you need to lower the weight slowly to strengthen your slow-twitch muscles (this should take 5-10 seconds!). Lastly, lift heavy weights if you want to get stronger. Aim for weight heavy enough where you can only do 6-10 reps.
Drills to Improve Lower Body Explosiveness/Strength

1.) One Legged Hops (fast-twitch muscle)
- Hop on one leg for 30-40 yds, trying to get there in as few of jumps as possible
- Each hop needs to be powerful and cover as much distance as possible
- Repeat for each leg 3 times

2.) Alternating Broad Jumps/Squat Jumps (glutes and quads)
- Jump forward off 2 feet from a standing position as far as you can
- From this spot, squat down and explode vertically, jumping as high as possible and landing in the same spot
- Alternate between these 2 jumps until the athlete has gone 25-30 yds
- Hold weights or medicine balls to add resistance. 5-20 lbs is sufficient.

3.) Squat and Lunge Holds (slow-twitch muscles)
- Have athletes in a squatting position, with legs bent 90 degrees and with good upper body posture
- Weight should be flat footed, NOT on the toes or we will put stress on the knees
- Hold this position for 45 sec to 1 minute

- After a 30 sec break, have athletes hold a lunge position for 30 sec on each leg
- Front leg should create a 90 degree angle, while back knee should be 2 inches from the ground, upper body should have upright posture
- These holds will recruit any remaining muscle fibers and make legs stronger and less prone to injury
Gameday Nutrition

PRE-GAME
Carbs, carbs, carbs!
Complex carbohydrates provide lasting energy to the body and include whole grains, brown rice, pasta, spinach, beans, broccoli, and wheat bread. Complex carbs energize the body for long periods of time, allowing you to store and call upon energy when you need it deep into your workout.

*Recommendation: Eat a hearty meal of whole grain pasta and veggies 3-6 hours before game/workout for long-lasting energy.

Simple carbohydrates provide energy quicker, and are good to consume an hour or 2 before gametime. Simple carbs can be found in more sugary foods like fruit, yogurt, cereal, and sports-drinks. Simple carbs offer less nutritional value than complex carbs, but provide instant energy.

*Recommendation: Eat a couple pieces of fruit (bananas also help prevent muscle cramping) an hour or 2 before gametime for faster-digesting energy.

GAME TIME
Hydrate
During a game, it is important that you hydrate your body with enough water to replenish what you sweat out. To aid hydration, consume drinks with electrolytes in them. Great sources of these are in drinks like Gatorade and Smart Water. If an individual feels light headed or their muscles start cramping, they are dehydrated and need some water and electrolytes.

*Recommendation: Drink water and sports drinks (with electrolytes) to avoid dehydration and muscle cramping.

**Instant Cramp Relief: for players unable to overcome muscle cramps, have them drink some Pedialyte. It’s meant for infants with dehydration, but it is packed with electrolytes for instant hydration.

POST GAME
Quick carbs and lots of protein to aid recovery!
Post game nutrition is the most important thing to help the body recover and rebuild. Any time we exercise, we are breaking down our muscles. After this breakdown, our muscles go into rebuilding mode, which is when they grow bigger and stronger. To ensure that our muscles recover and rebuild efficiently, we need to provide them with the right fuel.

Immediately following a game, it is important to get some simple carbs (see above) into our bodies. During/after a game, our bodies have depleted all carbohydrate energy stores and begin to eat away at our muscles for energy. To avoid muscle deterioration, we need to get some fast-absorbing calories into our body.

*Recommendation: Drink a cup of fruit juice or a sports drink to quickly replenish your body’s energy supply within 30 minutes of practice/game. Fruit, or even a piece of candy, can accomplish this as well.

Now that our body has some fuel to replenish itself, we need to give our muscles some protein so they can rebuild even stronger than they were. Great sources of protein are chicken, beef, fish, beans, nuts, eggs, tofu, yogurt, cheese, and milk. Protein powders can also be bought at local wellness stores and are a terrific source without having to pack on the extra calories that some of the above foods contain.
Recommendation: Within 30 minutes of playing, consume a scoop of protein powder (or other high-protein source) and a glass of milk or a cup of yogurt. Aim for about 20-50 grams of protein.
Non-Gameday Nutrition

1.) Eat every 2:30-3 hours
    - Aim for 5-6 medium sized meals per day to keep our bodies working at maximum performance

2.) Not all carbs are created equal
    - Choose wheat over sugary white breads, pastas, and rice
    - We want our carbs to digest slowly to provide long-lasting energy
    - Vegetables and fruits fuel our bodies for much longer than sugar-based snacks like candy and ice cream

3.) Eat lean protein
    - The less legs the animal has, the better (fish > chicken > pork/beef)
    - Eat about a deck of cards sized portion of meat
    - Dairy, cottage cheese, skim milk are all great
    - Aim to each 0.8 times your weight in grams of protein per day (i.e. if you weigh 100 lbs, eat at least 80 grams of protein)
    - Divide by 6 meals per day and you know what to aim for each meal

4.) Look for good fats
    - Fats reduce inflammation and control blood sugar levels
    - Saturated vs unsaturated: we want unsaturated fats!
    - Saturated fats tend to be solid at room temperature while unsaturated tend to be liquid at room temperature

5.) Breakfast is most important meal of the day
    - Make sure there are some carbs in your breakfast to fuel you; bread, bagel, oatmeal/cereal, and fruit will all do the trick
    - Your muscles have been starving all night, get them some protein in the form of milk, yogurt, eggs, peanut butter, or meat

6.) Snacks between meals are great!
    - Every time we eat, it starts up our metabolism and also fuels our body
    - Fruits and nuts make terrific snacks
    - Protein powders, shakes, energy bars are awesome for making sure your muscles stay in building-mode
Proper Warm Up and Cool Down

When we work out, especially with strength training, it is increasingly important that we take care of our bodies to minimize the risk of injury and also speed up the rate of recovery. So we also wanted to touch on the importance of proper warm-up and cool-down before and after a workout.

Static and Dynamic Stretching

Static stretching involves in-place movements (touching your toes, holding your foot to stretch your quad, etc.) that are held for a period of time, usually 10-30 seconds. This is different from dynamic stretching, where we warm-up the body gradually with agility-based movements (high knee walk, walking lunges, side shuffle, high skips, etc.)

Warm-Up

Recent research suggests that static stretching right before playing a sport or exercising can actually impair performance, such as reducing jumping height, lowering muscular strength and power, and slowing sprint time. It is never a good idea to statically stretch a cold muscle, because cold muscles are more likely to tear and/or micro-tear when stretched improperly. Think of stretching out a rubber band after it has been sitting in the freezer.

So, in order to prevent straining our cold muscles before playing, we do a dynamic warm-up. This way we can heat the body up gradually and safely (avoiding injury), as well as prepare the body to exert maximum effort. Once the body is completely warmed-up, it’s okay to do some light static stretching.

Examples of Dynamic Stretches:

- High Knee Walk
- High Knee Skip
- High Knee Run
- Butt-Kickers
- Straight Leg Skip
- Backpedal
- Lunge Walk
- Side Shuffle
- Scissor Kicks

Cool Down

At the end of a workout or once the body is warm, static stretching is great and it can be the safest and most effective form of stretching. The benefits of static stretching include: increases joint range of motion, corrects muscle imbalances, relieves joint stress, decreases excessive tension of muscles, maintains the normal functional length of all muscles, and helps to achieve optimum neuromuscular efficiency.
Injury Treatment: When to Ice vs Heat

Types of Injuries:
Acute injuries are sudden, sharp, traumatic injuries that occur immediately (or within hours) and cause pain (possibly severe pain). Most often acute injuries result from some sort of impact or trauma such as a fall, sprain, or collision and it's pretty obvious what caused the injury. Acute injuries also cause common signs and symptoms of injury such as pain, tenderness, redness, skin that is warm to the touch, swelling and inflammation. If you have swelling, you have an acute injury.

Chronic injuries, on the other hand, can be subtle and slow to develop. They sometimes come and go, and may cause dull pain or soreness. They are often the result of overuse, but sometimes develop when an acute injury is not properly treated and doesn't heal.

When to Ice:
Cold therapy with ice is the best immediate treatment for acute injuries because it reduces swelling and pain. Ice is a vaso-constrictor (it causes the blood vessels to narrow) and it limits internal bleeding at the injury site. Cold therapy is also helpful in treating some overuse injuries or chronic pain in athletes. An athlete who has chronic knee pain that increases after running may want to ice the injured area after each run to reduce or prevent inflammation.

When to Heat:
Heat is generally used for chronic injuries or injuries that have no inflammation or swelling. Sore, stiff, nagging muscle or joint pain is ideal for the use of heat therapy. Athletes with chronic pain or injuries may use heat therapy before exercise to increase the elasticity of joint connective tissues and to stimulate blood flow. Heat can also help relax tight muscles or muscle spasms.

Don't apply heat after exercise. After a workout, ice is the better choice on a chronic injury. Because heat increases circulation and raises skin temperature, you should not apply heat to acute injuries or injuries that show signs of inflammation. Safely apply heat to an injury 15 to 20 minutes at a time and use enough layers between your skin and the heating source to prevent burns. Moist heat is best, so you could try using a hot wet towel. You can buy special athletic hot packs or heating pads if you use heat often. Never leave heating pads on for more than 20 minutes at a time or while sleeping.

<table>
<thead>
<tr>
<th>INJURY</th>
<th>ICE</th>
<th>HEAT (MOIST HEAT PAD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PULLED MUSCLE</td>
<td>2-8x per day for 15 mins for 2-4 days (this is the healing stage)</td>
<td>Before practice/game (after healing stage is complete)</td>
</tr>
<tr>
<td>SPRAINED JOINTS</td>
<td>2-8x per day for 15 mins until swelling subsides</td>
<td></td>
</tr>
<tr>
<td>CONTUSION</td>
<td>Until swelling subsides</td>
<td></td>
</tr>
<tr>
<td>GENERAL SORENESS</td>
<td>Post-activity to reduce soreness</td>
<td>Heat will relax tight muscles before activity</td>
</tr>
<tr>
<td>MUSCLE SPASMS/CRAMPS</td>
<td></td>
<td>Heat to warm-up muscles before activity. For severe cramps, use heat to relax muscles post-activity.</td>
</tr>
<tr>
<td>CHRONIC ARTHRITIS OR JOINT PAIN</td>
<td>If it relieves symptoms, ice is fine</td>
<td>Heat is typically better for arthritic joints. Use as needed.</td>
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We Need Your Help!

A business like ours cannot thrive without the help of our existing customers. If you have found value in our programs, the single greatest thing you can do to help us is to spread the word. If your athlete has enjoyed our training, chances are his/her friends, teammates, and coaches will too!

Please pass along our information to anyone you think would benefit from working with us.
We appreciate it more than you know!

Contact Info:

Sweat City Fitness
Chris Chinn | President
chris@sweatcityfitness.com
650-759-2390
www.sweatcityfitness.com