THE BETTER ATHLETE

YOUTH ATHLETE HEALTH SERIES

THE INJURY PREVENTION GUIDE

A science-backed manual for keeping young athletes healthy, ages 7 to 18. Written for coaches, parents, and athletes, across every sport.

7-18	ALL	3	1
AGES	SPORTS	READERS	GOAL: HEALTH

THE BETTER ATHLETE

THEBETTERATHLETE.IO

THE BETTER ATHLETE YOUTH HEALTH SERIES

INJURY PREVENTION GUIDE FOR YOUNG ATHLETES, AGES 7 TO 18

Published by The Better Athlete. THEBETTERATHLETE.IO. First edition.

IMPORTANT: MEDICAL DISCLAIMER

This guide is an educational resource for coaches, parents, and athletes. It is not medical advice, and it is not a substitute for evaluation, diagnosis, or treatment by a qualified healthcare professional, including a physician, pediatrician, or licensed athletic trainer.

The information here is general and cannot account for any individual athlete's medical history or circumstances. It should never be used to diagnose or treat an injury, or to decide against seeking professional care. Every young athlete should complete a pre-participation physical before a season, and any injury or red-flag symptom described in this guide should be evaluated by a qualified medical professional.

If a treating clinician's guidance differs from anything in this guide, follow the clinician. In a medical emergency, call your local emergency number immediately. The publisher accepts no liability for any injury or loss arising from the use of this information.

BASIS OF THIS GUIDE

The recommendations here reflect widely endorsed principles of pediatric sports medicine and youth athletic development, including guidance on load management, early specialization, and safe return to play from major sports medicine and pediatric organizations. Where evidence is strong, this guide states recommendations plainly. Where individual judgment is required, it says so and points to a qualified professional.

CONTENTS

THE BETTER ATHLETE

1

SECTION 01

HOW TO USE THIS GUIDE

Who this guide is for, why one manual covers every sport, and the five ideas that run through all of it. Read this before anything else.

Who It Is For / Why All Sports / The Five Ideas

HOW TO USE THIS GUIDE

This is a practical injury prevention manual for young athletes between the ages of seven and eighteen, written for the three people who share responsibility for keeping them healthy: the coach, the parent, and the athlete. It applies across every sport, because the body growing underneath the uniform is the same whether the game is soccer, swimming, basketball, or track.

WHY ONE GUIDE FOR ALL SPORTS

Sports differ. The bodies playing them, and the way those bodies grow, do not. A twelve year old's growth plates are just as vulnerable sprinting down a soccer pitch as they are landing a gymnastics vault. The principles that protect a young athlete, managing how much they train, building strength around vulnerable joints, respecting the signals of a growing skeleton, are universal. This guide teaches those principles. Where a specific sport pattern matters, it is called out, but the foundation is shared.

WHO EACH PART IS FOR

READER	WHAT TO FOCUS ON
Coaches	The load management limits, the prehab routine to run with the team, and the red-flag symptoms that mean an athlete comes out and does not go back in.
Parents	The growth and maturation section, the recovery and sleep guidance, and the red flags to watch for at home. You see the athlete on the days the coach does not.
Athletes	The warm-up and cool-down routines, and the honest truth about pain. You are the only one who feels what your body is telling you. This guide teaches you to listen.

READ THIS FIRST: WHAT THIS GUIDE IS AND IS NOT

This is an educational resource. It is not medical advice, and it does not replace evaluation by a physician, a pediatrician, an athletic trainer, or a qualified sports medicine professional. It cannot diagnose an injury, and it is not a treatment plan.

Every young athlete should have a pre-participation physical before a season begins. Any athlete with pain, swelling, or a symptom described in the red-flag sections of this guide should be evaluated by a qualified medical professional. When this guide and a treating clinician disagree, the clinician is right. This guide is written to help you ask better questions and act sooner, not to answer those questions in a doctor's place.

THE FIVE IDEAS THAT RUN THROUGH EVERYTHING

1. **A young athlete is not a small adult.** The growing skeleton has vulnerabilities an adult body does not, and it needs to be trained accordingly. Almost every mistake in youth sports comes from forgetting this.
2. **Most youth injuries are preventable.** A large share of the injuries that sideline young athletes come from overuse and from doing too much too soon, not from bad luck. That means they respond to good decisions.
3. **Pain is information, not weakness.** The culture of playing through pain injures children. Teaching a young athlete to report pain early is one of the most protective things an adult can do.
4. **Rest is part of training.** Recovery is not the absence of work. It is where the body actually adapts and gets stronger. An athlete who never rests does not get fitter, they get hurt.
5. **The [illegible]**

THE BETTER ATHLETE

2

SECTION 02

GROWTH AND MATURATION RISKS

The one thing that changes everything: a young athlete is still being built. Growth plates, growth spurts, and bone development create windows of vulnerability that do not exist in adults.

Growth Plates / The Growth Spurt / Bone Density

GROWTH AND MATURATION RISKS

The single most important thing to understand about young athletes is that they are still being built. Their bones, their joints, and the tissues connecting them are changing month to month. This creates specific windows of vulnerability that do not exist in adult athletes, and understanding them is the foundation of everything else in this guide.

THE GROWTH PLATE: THE WEAKEST LINK

Near the ends of a child's long bones sits a region of developing cartilage called the growth plate, or physis. It is where bones lengthen as a child grows, and it will not finish hardening into solid bone until somewhere between the mid and late teens, later in boys than in girls on average.

Here is why it matters so much. In a growing child, the growth plate is often **weaker than the ligaments and tendons around it**. In an adult, a hard force through a joint tends to sprain a ligament. In a child, that same force can injure the growth plate instead. This single fact reshapes how young athletes must be trained and how their injuries must be treated.

WHY A CHILD'S SPRAIN DESERVES MORE CAUTION

Because the growth plate can be the weak point, an injury that looks like a simple sprain in a child can sometimes involve the growth plate itself. This is a central reason why a young athlete's injury should be evaluated by a professional rather than assumed to be minor. What would be a bruise or a sprain in an adult is not automatically the same thing in a growing child.

GROWTH PLATE INJURIES BY LOCATION

Certain growth plates take repeated stress in young athletes and become predictable trouble spots. These conditions are common, they are usually manageable when caught early, and they are frequently made worse by playing through them.

CONDITION	WHERE	TYPICAL AGE	WHAT IS HAPPENING
Osgood-Schlatter	Front of the knee, below the kneecap	10 to 15	The tendon below the kneecap pulls repeatedly on the growth area at the top of the shin, causing pain and a bony bump. Very common in jumping and running sports.
Sever's Disease	Back of the heel	8 to 14	The Achilles tendon pulls on the growth plate of the heel bone. The most common cause of heel pain in active children. Aggravated by hard surfaces and worn-out shoes.
Sinding-Larsen-Johansson	Bottom of the kneecap	10 to 14	Similar to Osgood-Schlatter but at the lower tip of the kneecap. Common in jumpers.
Little League Elbow	Inside of the elbow	9 to 14	Repeated throwing stresses the growth plate on the inner elbow. A leading reason pitch counts exist. Can become serious if ignored.
Little League Shoulder	Upper arm, at the shoulder	11 to 16	Repeated overhead throwing stresses the growth plate of the upper arm bone. Pain with throwing that should never be pushed through.
Gymnast's Wrist	Growth plate of the forearm at the wrist	10 to 16	Repeated weight-bearing through the wrist stresses the growth plate. Seen in gymnastics, cheer, and tumbling.

Notice the pattern. Every one of these is an **overuse condition**, driven by the same motion repeated too many times without enough recovery. None of them come from a single dramatic accident. That is good news, because it means they are largely preventable through load management, which this guide covers in detail.

THE GROWTH SPURT: A WINDOW OF HIGHER RISK

During the rapid growth of puberty, bones can lengthen faster than the muscles and tendons attached to them can keep up. For a period of months, a young athlete may be temporarily tighter, less flexible, and less coordinated than they were before, simply because their limbs got longer and everything attached is playing catch-up.

This has real consequences during the growth spurt:

- **Flexibility can decrease** even in a well-stretched athlete, because the bone outpaced the muscle. This is normal and temporary, but it raises strain risk.
- **Coordination can dip.** The brain's map of where the limbs are in space has to update for a body that literally changed size. A previously graceful athlete may look briefly clumsy.
- **Growth plates are at their most active, and most vulnerable,** during this window.
- **Injury risk rises** around the period of peak height growth. This is a known higher-risk window, not a coincidence.

PRACTICAL SIGNAL FOR COACHES AND PARENTS

If a young athlete suddenly grows several inches, expect a temporary dip in flexibility and coordination, and do not mistake it for the athlete slacking off. This is a moment to hold training volume steady rather than push it, to emphasize mobility work, and to watch closely for growth plate complaints. Tracking height every few months is a simple way to know when an athlete is entering this window.

BONE DENSITY AND THE GROWING SKELETON

Childhood and adolescence are the most important years of a person's life for building bone. The majority of adult bone mass is laid down before the early twenties, and the teenage years are the peak of that process. Sport, when managed well, is one of the best things a young person can do for lifelong bone health. Impact and loading tell the skeleton to build.

But this same system can be pushed the wrong way. When training load, energy intake, and recovery fall out of balance, bone can weaken instead of strengthen, and stress fractures become a risk. This is covered in the load management section, but two points belong here:

- **Under-fueling harms bone.** A young athlete who trains hard but does not eat enough to cover that training can disrupt the hormones that build bone. Over time this weakens the skeleton and raises fracture risk, sometimes with lasting consequences. This affects athletes of every gender.
- **Menstrual changes are a warning sign, not a badge of fitness.** In a female athlete, the loss or absence of periods is a signal that the body may be under too much stress and too little fuel. It should always be taken seriously and evaluated by a physician. It is never something to train through or ignore.

WHAT THIS SECTION MEANS IN PRACTICE

BECAUSE A YOUNG ATHLETE...	THE ADULTS AROUND THEM SHOULD...
has vulnerable growth plates	Take every persistent joint complaint seriously and get it evaluated rather than assumed to be minor.
gets injured more during growth spurts	Track height, hold volume steady during rapid growth, and emphasize mobility in that window.
is building lifelong bone right now	Ensure adequate fueling and recovery, and treat menstrual changes or repeated stress injuries as medical red flags.
is still developing coordination	Prioritize movement quality and landing skill over early specialization and raw volume.

THE BETTER ATHLETE

3

SECTION 03

COMMON INJURIES AND WHY THEY HAPPEN

The handful of injury patterns that cost young athletes the most time, and the biomechanics behind each. You cannot prevent what you do not understand.

ACL and Knee / Ankle Sprains / Overuse / Stress Fractures

THE MOST COMMON INJURIES AND WHY THEY HAPPEN

Across all youth sports, a handful of injury patterns account for a large share of the time young athletes lose. Understanding the biomechanics, the actual mechanism of why each one happens, is what makes prevention possible. You cannot prevent what you do not understand.

THE SINGLE BIGGEST CATEGORY: OVERUSE

Before the specific injuries, the most important fact. A large proportion of youth sports injuries are overuse injuries, not sudden accidents. They build up gradually from the same motion repeated too often without enough recovery. This category is also the most preventable, which is why load management sits at the center of this guide. A sprained ankle is bad luck. A stress fracture from a training spike is a decision.

INJURY 1: ACL AND KNEE LIGAMENT INJURIES

THE HIGH-COST INJURY EVERY CUTTING AND JUMPING SPORT SHARES

What it is. The anterior cruciate ligament, or ACL, is a key stabilizer inside the knee. Tearing it is one of the most serious common injuries in youth sport, often requiring surgery and many months of rehabilitation. It is especially common in sports with cutting, pivoting, and landing, such as soccer, basketball, and volleyball.

The biomechanics: why it happens. Most ACL tears in young athletes are **non-contact**. Nobody hits them. The injury happens in a fraction of a second during a landing or a cut, when the knee collapses inward, the athlete is upright and stiff-legged rather than bent and absorbing, and the body weight is behind or to the side of the planting foot. The knee is simply not in a position to handle the force, and the ligament fails.

Why young athletes are at particular risk. During and after the growth spurt, athletes are managing longer limbs, shifting strength, and developing coordination all at once. Female athletes face a higher rate of ACL injury than males, related to differences in anatomy, hormones, and movement patterns, which makes prevention training especially valuable for them.

THE GOOD NEWS ON ACL INJURIES

This is the injury where prevention is best proven. Structured neuromuscular training programs, the kind of jump-landing, balance, and strength work in this guide's prehab routine, meaningfully reduce ACL injury rates in young athletes when done consistently. The exercises that teach an athlete to land softly, with a bent knee tracking over the toes, directly address the mechanism. This is not a hopeful theory. It is one of the clearest wins in sports medicine.

INJURY 2: ANKLE SPRAINS

THE MOST COMMON ACUTE INJURY ACROSS YOUTH SPORT

What it is. A stretch or tear of the ligaments on the outside of the ankle, usually when the foot rolls inward. It is the most common acute injury in young athletes across nearly every sport that involves running, jumping, or changing direction.

The biomechanics: why it happens. The ankle rolls when the foot lands on an uneven surface, on another player's foot, or in an off-balance position the athlete cannot correct in time. The ligaments on the outside of the ankle are put under a force they cannot handle, and they stretch or tear.

Why it matters more than people think. Ankle sprains are treated casually, and that is a mistake. The biggest risk factor for spraining an ankle is **having sprained it before**. Each sprain can leave the ankle weaker and its position

sense duller, making the next one more likely. This is why proper rehabilitation and balance training after a sprain matter so much. A sprain shrugged off becomes a chronic problem.

INJURY 3: OVERUSE INJURIES OF THE GROWTH PLATES AND TENDONS

THE PREVENTABLE EPIDEMIC OF YOUTH SPORT

What it is. This is the whole family of conditions from the growth section, Osgood-Schlatter at the knee, Sever's at the heel, Little League elbow and shoulder, gymnast's wrist, plus tendon overload like jumper's knee and shin splints. They share one cause: the same motion, repeated too many times, without enough recovery.

The biomechanics: why it happens. Tissue adapts to load when the load is followed by recovery. When the load keeps coming without enough recovery, the tissue never repairs, and damage accumulates faster than the body can fix it. In a growing athlete, the growth plates are the site that gives way, because they are the weak link. The result is pain that starts mild, is easy to dismiss, and gets worse the longer it is pushed through.

The drivers behind the epidemic.

- **Early single-sport specialization.** A child who plays one sport year-round loads the exact same tissues in the exact same way, every day, with no offseason. This is one of the strongest and most consistent risk factors for overuse injury in youth sport.
- **Playing on multiple teams at once,** which stacks training volume beyond what a growing body can absorb.
- **No offseason,** which removes the recovery window the skeleton needs.
- **Training spikes,** a sudden jump in how much or how hard an athlete trains, often at the start of a season or a new team.

INJURY 4: STRESS FRACTURES

WHEN BONE LOSES THE RACE BETWEEN DAMAGE AND REPAIR

What it is. A tiny crack in a bone caused by repeated impact, most often in the shin, the foot, or the lower back. It develops over weeks, not in a single moment, and it is the skeleton's version of an overuse injury.

The biomechanics: why it happens. Bone is living tissue that constantly repairs itself. Impact from running and jumping causes microscopic damage that the body normally repairs and, in doing so, builds the bone stronger. A stress fracture happens when the damage outpaces the repair, when training volume climbs too fast, or when the athlete is not fueling and recovering enough to support that repair. The bone falls behind and cracks.

The fueling connection. Stress fractures are strongly linked to under-fueling. A young athlete who does not eat enough to cover their training disrupts the hormonal signals that build and repair bone. Combined with a training spike, this is a recipe for a stress fracture, and it can signal a deeper problem with energy availability that a physician should evaluate.

THE THREAD CONNECTING ALL FOUR

Three of these four injury categories, and the most common one by far, come down to load and recovery. Too much, too soon, too often, without enough rest or fuel. The fourth, ACL injury, responds powerfully to trainable movement skill. That is the entire premise of this guide: the injuries that cost young athletes the most are, to a remarkable degree, the ones adults can help prevent through better decisions.

THE BETTER ATHLETE

4

SECTION 04

THE PREHAB ROUTINE

The actual exercises, with the reason each one helps and how to do it safely. A dynamic warm-up for before, core and strength work for the week, and a cool-down for after. Age guidance is on every movement.

Warm-Up / Core Stability / Cool-Down / The Weekly Picture

THE PREHAB ROUTINE

Prehab means the work you do to prevent injury before it happens, rather than the rehab you do to recover after. For a young athlete it comes down to four habits: warm up properly every time, build core and landing strength through the week, cool down and stretch after, and recover every day. Here is the whole routine at a glance, then every exercise in detail.

THE ROUTINE AT A GLANCE

WHEN	WHAT	HOW LONG	HOW OFTEN	PURPOSE
Before Activity	Dynamic Warm-Up	10 to 12 min	Every practice and game	Raise temperature, mobilize, and rehearse movement. Always finish with landing practice.
2 to 3x per Week	Core and Strength	10 to 15 min	Separate from or after practice	Core stability plus the landing and balance work that prevents ACL and ankle injuries.
After Activity	Cool-Down and Stretch	8 to 10 min	Every practice and game	Downshift the heart rate and gently stretch warm muscles. End with slow breathing.
Daily	Recovery	Ongoing	Every day	Sleep, food, and fluid. The training only works if the recovery supports it.

HOW TO READ THE EXERCISE CARDS

Every exercise below tells you why it helps, how to do it, the coaching cues that make it work, the common mistakes to watch for, and age guidance. Quality always matters more than quantity. A handful of clean, well-coached repetitions protects a young athlete far more than many sloppy ones. When a movement is new, slow it down and get it right before adding speed or reps.

DYNAMIC WARM-UP (BEFORE ACTIVITY)

Run this before every practice and every game, in order. It takes 10 to 12 minutes and it is the most important 10 minutes of the session. A warm-up is not optional and it is not a place to save time.

EASY JOG AND SKIP

RAISE

WHY IT HELPS Raise body temperature and heart rate gradually so tissues are ready to work.

HOW TO DO IT Light jog for 2 to 3 minutes, then add skipping, side shuffles, and backward jogging.

COACHING CUES

- Relaxed and easy. This is a warm-up, not a workout.
- Stay tall. Land softly and quietly.
- By the end you should feel warm, not tired.

COMMON MISTAKES Starting too hard, skipping this and going straight to sprinting or the game.

AGE GUIDANCE All ages. Shorten to 2 minutes for the youngest, extend for teens.

LEG SWINGS

MOBILITY

WHY IT HELPS Loosen the hips through the range of motion the sport will demand.

HOW TO DO IT Hold something for balance. Swing one leg front to back 10 times, then side to side 10 times. Switch legs.

COACHING CUES

- Controlled swings, not violent kicks.
- Keep the upper body tall and still.
- Let the range grow a little with each swing.

COMMON MISTAKES Swinging so hard the low back arches, rushing through them.

AGE GUIDANCE All ages.

WALKING LUNGE WITH A REACH

MOBILITY

WHY IT HELPS Open the hips and gently lengthen the muscles at the front of the hip.

HOW TO DO IT Step into a lunge, then reach the same-side arm overhead and lean gently away. Alternate legs across 10 steps.

COACHING CUES

- Front knee tracks over the foot, not caving inward.
- Stand tall through the torso.
- Move smoothly from one step to the next.

COMMON MISTAKES Front knee caving inward, letting the back knee crash to the floor.

AGE GUIDANCE Ages 9 and up. Younger children can do a simple walking lunge with no reach.

INCHWORM

MOVEMENT PREP

WHY IT HELPS Wake up the core and gently lengthen the back of the legs.

HOW TO DO IT From standing, hinge and walk the hands out to a plank, then walk the feet toward the hands. Repeat 5 times.

COACHING CUES

- Keep the hips level in the plank position.
- Bend the knees as much as needed to walk the hands out.
- Move under control.

COMMON MISTAKES Letting the hips sag in the plank, rushing.

AGE GUIDANCE Ages 8 and up.

A-SKIP

MOVEMENT PREP

WHY IT HELPS Rehearse good running mechanics and coordination before running fast.

HOW TO DO IT Skip forward driving one knee up to hip height, toe pulled up, landing softly on the ball of the foot. 2 rounds of 15 yards.

COACHING CUES

- Tall posture, eyes forward.
- Knee up, toe up, land quiet.
- Arms drive naturally with the legs.

COMMON MISTAKES Leaning back, landing flat and heavy, looking at the ground.

AGE GUIDANCE Ages 9 and up. Younger children can march the pattern instead of skipping.

LANDING PRACTICE: SNAP DOWN AND STICK

LANDING SKILL

WHY IT HELPS Teach the single most protective athletic skill: how to land softly with a controlled knee.

HOW TO DO IT From tall on the toes, drop quickly into a soft athletic stance and freeze. Hold the landing 2 seconds. Repeat 5 times.

COACHING CUES

- Land quietly. If people hear it, do it again softer.
- Knees bend and track over the toes, never caving inward.
- Hips sit back, chest stays up, weight balanced.
- Stick and hold. No wobble.

COMMON MISTAKES Loud stiff landings, knees caving inward, landing flat-footed with straight legs.

AGE GUIDANCE All ages. This is the highest-value drill in the warm-up. Never skip it.

CORE STABILITY (2 TO 3 TIMES PER WEEK)

A strong, stable core protects the spine and lets the arms and legs produce force safely. These can be done at the end of practice or at home. Quality matters far more than time or reps.

FRONT PLANK

ANTI-EXTENSION

WHY IT HELPS Build the deep core strength that stabilizes the spine and transfers force between the upper and lower body.

HOW TO DO IT Forearms on the floor, body in one straight line from head to heels. Hold for the prescribed time.

COACHING CUES

- Squeeze the stomach and the glutes.
- Hips level, not sagging and not piked up.
- Breathe normally throughout.
- Stop the moment the hips sag.

COMMON MISTAKES Hips sagging toward the floor, holding the breath, holding a broken position to hit a time.

AGE GUIDANCE All ages. Start with 15 to 20 seconds for younger children.

SIDE PLANK

ANTI-LATERAL

WHY IT HELPS Strengthen the muscles on the side of the trunk and hip that control balance during cutting and single-leg movement.

HOW TO DO IT On one forearm, body in a straight line, hips lifted. Hold, then switch sides.

COACHING CUES

- Stack the shoulders and hips.
- Lift the hips so the body is one straight line.
- Do not let the top shoulder roll forward.

COMMON MISTAKES Hips sagging, rolling forward, holding the breath.

AGE GUIDANCE Ages 8 and up. Younger children can do it with bent knees on the floor.

DEAD BUG

ANTI-EXTENSION

WHY IT HELPS Teach the core to stay stable while the arms and legs move, which is what it does in every sport.

HOW TO DO IT On the back, arms up, knees bent at 90 degrees. Lower the opposite arm and leg slowly, then return. Alternate.

COACHING CUES

- Press the low back gently into the floor and keep it there.
- Move slowly and with control.
- Only reach as far as the back stays flat.

COMMON MISTAKES Low back arching off the floor, moving too fast.

AGE GUIDANCE All ages. One of the safest and most useful core drills.

BIRD DOG

ANTI-ROTATION

WHY IT HELPS Train the core to resist twisting while coordinating opposite limbs.

HOW TO DO IT On hands and knees, extend the opposite arm and leg, hold, then switch. Keep the hips level.

COACHING CUES

- Reach long, not high.
- Keep the hips square, do not let them rotate.
- Hold 2 seconds, then switch under control.

COMMON MISTAKES Hips rotating, arching the low back, rushing.

AGE GUIDANCE All ages.

GLUTE BRIDGE

HIP STRENGTH

WHY IT HELPS Build the glute strength that protects the knee and powers running and jumping.

HOW TO DO IT On the back, knees bent, feet flat. Drive through the heels and lift the hips to a straight line. Squeeze and lower.

COACHING CUES

- Squeeze the glutes at the top.
- Ribs down, do not arch the low back to lift higher.
- Two second hold at the top.

COMMON MISTAKES Arching the low back instead of using the glutes, pushing through the toes.

AGE GUIDANCE All ages.

COOL-DOWN AND STRETCHING (AFTER ACTIVITY)

Stretching is done after activity, when muscles are warm, never as the cold warm-up. Hold each stretch gently. The goal is to maintain range of motion and start recovery, not to force flexibility.

EASY WALK

DOWNSHIFT

WHY IT HELPS Bring the heart rate down gradually and start the recovery process.

HOW TO DO IT Walk easily for 3 to 5 minutes after activity ends.

COACHING CUES

- Relaxed pace, breathe easy.
- Let the heart rate settle before stopping fully.

COMMON MISTAKES Stopping abruptly and sitting down immediately after hard effort.

AGE GUIDANCE All ages.

CALF STRETCH

STATIC STRETCH

WHY IT HELPS Gently lengthen the calf, which is often tight in running and jumping athletes and linked to heel pain.

HOW TO DO IT Hands on a wall, one leg back with the heel down, lean in until a gentle stretch is felt. Hold 20 to 30 seconds each side.

COACHING CUES

- Keep the back heel down.
- Gentle stretch, never painful.
- Breathe and relax into it.

COMMON MISTAKES Bouncing, stretching to the point of pain.

AGE GUIDANCE All ages. Especially important for athletes with heel complaints.

QUAD AND HIP FLEXOR STRETCH

STATIC STRETCH

WHY IT HELPS Lengthen the front of the thigh and hip, which tighten during growth spurts.

HOW TO DO IT Standing, pull one heel toward the glute and stand tall. For a deeper stretch, kneel and tuck the hips under. Hold 20 to 30 seconds each side.

COACHING CUES

- Stand tall, do not arch the low back.
- Squeeze the glute of the stretching leg.
- Gentle, never painful.

COMMON MISTAKES Arching the low back, bouncing.

AGE GUIDANCE All ages.

FIGURE-4 GLUTE STRETCH

STATIC STRETCH

WHY IT HELPS Release the glutes and the outside of the hip after cutting and running.

HOW TO DO IT On the back, cross one ankle over the opposite knee and gently pull the thigh toward the chest. Hold 20 to 30 seconds each side.

COACHING CUES

- Gentle pull, relaxed breathing.
- Keep the head and shoulders on the floor.

COMMON MISTAKES Yanking the leg, holding the breath.

AGE GUIDANCE All ages.

HAMSTRING STRETCH

STATIC STRETCH

WHY IT HELPS Lengthen the back of the thigh, which is prone to tightness during growth.

HOW TO DO IT Seated or lying, gently reach toward a straight leg until a mild stretch is felt behind the thigh. Hold 20 to 30 seconds each side.

COACHING CUES

- Reach from the hips with a flat back.
- Mild stretch, never sharp.
- Do not round the low back to reach further.

COMMON MISTAKES Bouncing, rounding the back, chasing pain.

AGE GUIDANCE All ages.

SLOW BREATHING

RECOVERY

WHY IT HELPS Shift the body into a recovery state and support the sleep that follows.

HOW TO DO IT Sit or lie down. Breathe in through the nose for 4 counts, out slowly for 6. Continue for 2 to 3 minutes.

COACHING CUES

- Let the belly expand, not just the chest.
- Make the exhale longer than the inhale.
- Eyes closed, relaxed.

COMMON MISTAKES Rushing it, treating it as optional.

AGE GUIDANCE All ages. A calm end to training helps sleep, and sleep is where growth happens.

THE BETTER ATHLETE

5

SECTION 05

LOAD MANAGEMENT AND RECOVERY

The most powerful injury prevention tool there is: managing how much a young athlete trains. Simple limits that prevent a large share of youth overuse injuries.

Volume Limits / The Training Spike / Monitoring Total Load

LOAD MANAGEMENT AND RECOVERY

If the growth section explains why young athletes are vulnerable, this section explains what to do about it. Managing how much a young athlete trains is the single most powerful tool for preventing the injuries that cost them the most. Most of these limits are simple, and following them prevents a large share of youth overuse injuries.

THE CORE PRINCIPLES OF SAFE TRAINING VOLUME

These are widely endorsed guidelines from pediatric sports medicine. They are not rigid laws for every child, but they are strong defaults, and deviating from them should be a deliberate, informed decision, not an accident of a packed schedule.

GUIDELINE	WHY IT EXISTS
Hours per week should not exceed the athlete's age	A common rule of thumb: a 12 year old should generally train no more than about 12 organized hours per week. Beyond roughly this level, injury risk climbs. It is a simple check that catches overscheduled kids.
Take at least 1 to 2 rest days every week	At least one, ideally two, full days off from organized sport each week. Rest days are when the body adapts and the growth plates recover. They are part of training, not a break from it.
Take at least 2 to 3 months off per year from a given sport	Spread across the year, not all at once. Time away from a single sport's specific loading pattern lets overused tissues fully recover and prevents the year-round grind that drives overuse injury.
Do not play one sport more than about 8 months a year	Year-round single-sport play is one of the strongest predictors of overuse injury. An offseason is protective.
Avoid playing on multiple teams in the same season	Stacking teams stacks volume, often past what a growing body can absorb, and the total is usually invisible to any single coach.
Delay single-sport specialization	Playing a variety of sports develops broader movement skill, loads the body in varied ways, and is associated with lower injury rates and, for most athletes, equal or better long-term success.

THE MOST IMPORTANT RULE: AVOID THE TRAINING SPIKE

The body adapts to training when the increase is gradual. Injuries cluster when the workload jumps suddenly, a new season, a new team, a tournament week, a return from time off treated as if no time had passed. The safest path is to increase training gradually and to build back up slowly after any break. When in doubt, ramp up slower than feels necessary. A young athlete who does slightly too little this week is available next week. One who does too much may not be.

SPORT-SPECIFIC VOLUME LIMITS WORTH KNOWING

Some sports have specific, well-established limits because their injury patterns are so predictable. Even if your athlete's sport is not listed, the principle, count the high-stress repetitions and cap them, applies everywhere.

SPORT	THE ESTABLISHED GUIDELINE
Baseball pitching	Pitch counts by age, with required rest days between pitching outings, and no pitching year-round. These limits exist specifically to protect the young elbow and shoulder, and they work. Follow the published pitch count guidelines for the athlete's age and league.
Throwing sports generally	Limit total high-effort throws, respect rest between throwing days, and never throw through arm pain.
Running sports	Increase weekly distance gradually. A sudden jump in mileage is a leading cause of stress injury.
Gymnastics, cheer, tumbling	Monitor total impact and weight-bearing through the wrists and back, and respect complaints early, since these load growth plates heavily.

MONITORING LOAD ACROSS A YOUNG ATHLETE'S WHOLE LIFE

The hardest part of load management is that no single adult sees the whole picture. A club coach sees practice. A school coach sees a different practice. A parent sees the third team and the backyard shooting drills. The athlete's total load is the sum of all of it, and it is often invisible to everyone.

- **One adult should track the total.** Usually a parent. Add up every organized hour across every team and every sport in a week, and check it against the age guideline.
- **Count the hidden load.** Private lessons, personal training, backyard practice, and gym class all count. They are real load on the same growing tissues.
- **Watch the calendar for pinch points.** Tournament weekends, tryout periods, and the overlap between two seasons are the high-risk windows. Plan lighter around them.

THE BETTER ATHLETE

6

SECTION 06

RED FLAGS: WHEN TO STOP

The signals that a young athlete needs to stop and be evaluated. The most important page here to know by heart. When in doubt, sit them out.

Emergencies / Stop for Today / Watch and Track

RED FLAGS: WHEN TO STOP

This is the most important page in the guide for a coach or parent to know by heart. These are the signals that a young athlete needs to stop and be evaluated. Some mean stop for today. Some mean stop and see a doctor before returning. Knowing the difference, and acting on it, prevents a manageable problem from becoming a serious one.

THE GOVERNING RULE

When in doubt, sit them out. No practice, no game, and no tournament is worth a young athlete's long-term health. An athlete who sits out a session they did not need to lose nothing. An athlete who plays through a serious warning sign can lose a season, or more. The cost of caution is always smaller than the cost of being wrong.

STOP IMMEDIATELY AND SEEK EMERGENCY CARE

These signs mean the activity ends now and the athlete is evaluated urgently. Do not wait to see if it passes.

WARNING SIGN	WHY IT IS AN EMERGENCY
Any suspected head injury, or any loss of consciousness	A blow to the head with confusion, memory loss, headache, dizziness, nausea, or a knockout must be taken seriously. The athlete does not return that day under any circumstances, and is evaluated by a medical professional before returning to sport. When in doubt, sit them out.
Neck or spine pain after a collision, with numbness or tingling	Possible spinal injury. Do not move the athlete. Call for emergency help.
A visible deformity in a limb or joint	A bone or joint out of place suggests a fracture or dislocation. Immobilize and get emergency care.
A pop or snap followed by immediate swelling and inability to continue	Suggests a significant ligament or bone injury, such as an ACL tear. Stop and get evaluated promptly.
Chest pain, fainting, or severe difficulty breathing	Any of these during exercise is a medical emergency. Stop and call for help immediately.
Signs of heat illness: confusion, stumbling, stopping sweating, collapse	Heat stroke is life-threatening and progresses fast. Cool the athlete aggressively and call for emergency help at once.

STOP FOR TODAY AND DO NOT PUSH THROUGH

These do not require an ambulance, but they mean the athlete is done for the session and should be watched, and evaluated if the sign persists or returns.

WARNING SIGN	WHAT IT USUALLY MEANS
Pain that changes how the athlete moves	Limping, a changed throwing motion, or favoring a side means the body is compensating around something. Playing through it spreads the problem. Stop.
Pain in a specific spot on or near a bone	Sharp, pinpoint pain on a bone can signal a stress injury. It should be evaluated before returning, not pushed through.
Joint swelling	A swollen joint is a joint that is injured or irritated. It needs rest and evaluation, not more play.
Pain that gets worse as activity continues	Good pain fades as the athlete warms up. Pain that grows as the session goes on is a warning to stop.
Any joint that gives way, catches, or locks	A joint that buckles or catches is unstable or has something wrong inside it. Stop and get it looked at.

WATCH, TRACK, AND EVALUATE IF IT PERSISTS

These are the quieter signals. They do not force an athlete off the field today, but ignored over weeks they become the injuries that end seasons. Track them, and get them evaluated if they persist beyond a week or two or keep coming back.

- **Pain that shows up the day after activity** and lingers, especially near a joint or growth plate.
- **Pain that started mild and is slowly getting worse** week over week. This is the classic pattern of an overuse injury being pushed through.
- **Morning stiffness or pain** in a specific joint that was not there before.
- **A drop in performance, energy, or mood** alongside heavy training, which can signal under-recovery or under-fueling.
- **In a female athlete, missed or absent periods,** which should always be discussed with a physician and never dismissed as a normal part of training hard.
- **Any pain a young athlete tries to hide.** Children conceal pain because they are afraid of losing playing time. Create an environment where reporting pain is safe and rewarded, not punished.

TEACHING ATHLETES THE DIFFERENCE BETWEEN SORENESS AND PAIN

Young athletes need a simple mental model. **Soreness** is dull, spread across a muscle, shows up a day after hard work, feels better as you warm up, and eases in a few days. It is normal. **Pain** is sharp or specific, sits on a joint or a bone, gets worse with activity, and does not settle. It is a signal. Teach every athlete this difference, and teach them that reporting pain early is a sign of a smart athlete, not a weak one.

THE BETTER ATHLETE

7

SECTION 07

RECOVERY, FUEL, AND SLEEP

The other half of getting better. In a growing athlete, recovery powers both training and growth itself. Sleep, fuel, and fluid, kept simple.

Sleep / Fuel / Hydration / The Weekly Picture

RECOVERY, FUEL, AND SLEEP

Training is only half of getting better. The other half is recovery, and in a growing athlete it matters even more, because the same resources that repair training also power growth itself. An under-recovered young athlete is not just under-performing. They are under-building the body they will carry for life.

SLEEP: THE MOST POWERFUL RECOVERY TOOL THERE IS

Nothing else on this page comes close. Sleep is when the body releases most of its growth hormone, repairs tissue, and consolidates the skills practiced that day. For a young athlete, sleep is not downtime. It is when the training turns into adaptation and the growing happens.

AGE	SLEEP NEEDED	THE REALITY
Ages 6 to 12	9 to 12 hours	Most active kids in this range get less than they need, especially with early practices and screens.
Ages 13 to 18	8 to 10 hours	Teenagers are chronically short on sleep. This is the single most common recovery gap in youth sport, and closing it outperforms almost any other intervention.

What helps. A consistent bedtime and wake time, including weekends. Screens out of the bedroom and off before bed. A cool, dark, quiet room. No caffeine, which includes energy drinks and many sodas, in the afternoon or evening. These are simple, and they are more protective than any supplement a young athlete will ever be offered.

FUEL: EATING ENOUGH TO GROW AND TRAIN

THE MOST IMPORTANT POINT ON FUELING

The most common fueling mistake in youth sport is not eating the wrong foods. It is not eating enough. A growing athlete needs fuel for two jobs at once, the training and the growing, and under-fueling harms both. It weakens bone, disrupts hormones, stalls development, and drives stress injuries. If a young athlete is training hard and not growing or performing as expected, inadequate fuel is one of the first things to consider, with a physician or a registered dietitian.

This guide does not prescribe diets, calorie targets, or weight goals for young athletes, and neither should a coach. Those belong to the family and, when needed, a qualified professional. The universal principles are simple:

- **Eat enough, and then some.** Young athletes usually need more food than people expect. Hunger after training is normal and should be met, not resisted.
- **Eat regularly across the day.** Three meals and snacks, including something before and after training. Training on an empty stomach and not refueling afterward is a common, correctable mistake.
- **Build the plate simply.** A source of protein, plenty of carbohydrate for energy, fruits and vegetables, and some healthy fat. Whole foods first. There is no need to complicate it.
- **Fuel around training.** Something to eat before practice, and a real meal or substantial snack within a couple of hours after. The body repairs and refuels best when it is given the materials.

A NOTE ON WEIGHT, BODY IMAGE, AND SUPPLEMENTS

Comments about a young athlete's weight or body from a coach can cause real and lasting harm, including disordered eating. This is not the place for weight talk. Any concern about an athlete's eating, weight, or body image should be handled privately and referred to a physician or a registered dietitian, never managed on the field. On supplements: food comes first, and it is not close. Most young athletes are seeking a supplement to fix a problem that enough food and enough sleep would already have solved. Supplement questions belong with a physician.

HYDRATION

Young athletes are more vulnerable to overheating than adults, so fluid matters, especially in the heat.

- **Drink through the day,** not just at practice. Arriving already hydrated is half the battle.
- **Drink on a schedule during activity,** since young athletes do not reliably feel thirst until they are behind. Regular breaks, every 15 to 20 minutes in the heat.
- **Water is the default.** For most youth activity, water is enough. Longer or very hot sessions may warrant a sport drink with electrolytes.
- **A simple check:** pale urine means well hydrated, dark means drink more. It costs nothing and children will use it.

THE WEEKLY RECOVERY PICTURE

RECOVERY TOOL	HOW MUCH	THE ONE THING TO REMEMBER
Sleep	8 to 12 hours nightly by age	The highest-return recovery tool by far. Protect it first.
Rest days	1 to 2 per week	Full days off from organized sport. This is when the body adapts.
Fuel	Enough, spread across the day	Under-fueling is the common error. Eat to cover training and growth.
Fluid	Through the day and during activity	Young athletes overheat faster than adults. Drink on a schedule.
Offseason	2 to 3 months per year	Time away from one sport's pattern lets overused tissue fully recover.

THE BETTER ATHLETE

8

SECTION 08

THE LONG GAME

What it all comes down to: not the best young athlete, but the healthiest grown one, still playing and still in love with the sport.

THE LONG GAME

Every decision in this guide serves one goal: not the best young athlete, but the healthiest grown one, still playing, still improving, still in love with the sport. Here is what that comes down to.

WHAT THE EVIDENCE KEEPS TELLING US

- **Most youth injuries are preventable.** They come from overuse and from doing too much too soon, which means they respond to better decisions by the adults in charge.
- **Load management is the most powerful tool there is.** Respecting rest days, offseasons, and gradual progression prevents a large share of the injuries that cost young athletes the most.
- **Movement skill can be trained.** The prehab routine in this guide, especially landing and balance work, measurably lowers the rate of serious injuries like ACL tears.
- **Specializing early is a risk, not a shortcut.** Playing many sports builds better, more durable athletes, and for most children it does not cost anything in long-term success.
- **Recovery is where the building happens.** Sleep, fuel, and rest are not the opposite of training. They are the part of training where the athlete actually gets better and grows.

A SHORT WORD TO EACH READER

TO THE COACH

You set the culture. When you run the warm-up every day, respect pain, manage load, and never use a child's health as a bargaining chip against winning, you protect athletes who will remember it for life. The standard you hold is the program.

TO THE PARENT

You see the whole picture no single coach does. You track the total load, you protect the sleep, you make the food available, and you are the safe person a child can tell when something hurts. Watch, and listen, and be willing to pull them back.

TO THE ATHLETE

Your body is telling you things all the time. Learning to listen to it, to know the difference between soreness and pain, and to speak up early, is not weakness. It is the single smartest skill an athlete can build, and it is the one that keeps you playing the game you love for years, not months.

THE WHOLE GUIDE IN ONE SENTENCE

Warm up every time, train in gradual steps with real rest, build strength and landing skill, eat and sleep enough to grow, and treat pain as information to act on early, and a young athlete gives themselves the best possible chance to stay healthy and keep playing.

A FINAL REMINDER

This guide is education, not diagnosis. It is written to help coaches, parents, and athletes make better and earlier decisions, and to know when to seek help. It does not replace a physician, a pediatrician, or an athletic trainer. Every athlete should have a pre-participation physical, and any injury or red-flag symptom should be evaluated by a qualified medical professional. When this guide and a treating clinician disagree, follow the clinician. The most protective thing any adult can do for a young athlete is to take their pain seriously and get them evaluated when something is wrong.