Coaching Resource Manual

Nutrition, Strength and Conditioning and Injury Management

Tim Koba, ATC,CSCS,PES,CES,CMT

Cayuga Medical Center
Sports Medicine and Athletic Performance
THE CENTER IS YOU

Table of Contents

Overview

The purpose of this guide is to provide a starting point on nutrition, strength training, conditioning and injury management to serve as a reference for coaches, parents and athletes that they can utilize to reach their full potential.

There is a large amount of information available through different organizations, web sites and certifications. This guide is meant to gather information in order to help athletes and coaches make good decisions.

Nutrition

Dietary Needs

In order to perform at the highest possible level the body needs fuel. It needs fuel to run its normal daily processes, supply energy to the brain and muscles and to repair itself post activity. It gets its energy through calories.

There are numerous charts available to show how many of each group someone needs to eat. The main thing to remember is that calories through food supply energy to the body throughout the day. With that in mind it is important to eat.

Different sports have different needs, as do specific athletes. It is important to find a food balance that works for everyone as an individual. If there is a question on how to achieve that balance, please consult with a certified and knowledgeable professional for more information.

Carbohydrates are important for exercise since they deliver energy to the muscles and allow extra energy to be stored for later use. As an athlete, it is important to eat high quality complex carbohydrates such as whole grains, rice, fruits and vegetables. Consuming these types of foods will supply enough fuel along with creating a feeling of fullness.

Protein is important for its role in the regeneration and repair of skeletal muscle. Consuming protein throughout the day, as well as after exercise, will help in the rebuilding process.

The main thing to remember as a high school athlete is to eat throughout the day. Try not to go longer than 4 hours between meals. Meals do not need to be large, but by consistently supplying your body with food will keep you energized and keep your metabolism revved up, not only for sport, but for school, too.

Typical Day

Breakfast-protein, carbohydrate, fluid

Oatmeal with fruit, orange juice or yogurt with fruit and granola

Snack (optional)-protein, carbohydrate, fluid

Peanut butter sandwich or protein/granola bar or yogurt or fruit

Lunch-protein, carbohydrate, fat, fluid

Leftovers from dinner or school lunch or turkey sandwich, pretzels, fruit

Pre-workout-carbohydrate, small protein, fluid

Sandwich or fruit or crackers with peanut butter or nuts

Post-workout-carbohydrate, protein, fluid

Sandwich or dinner or fruit or pretzels with peanut butter

Dinner-protein, carbohydrate, fat, fluid

Chicken with green beans and rice or salad with chicken or pasta or lean beef and vegetables

Snack (optional)-carbohydrate, protein

Yogurt and granola or fruit salad and sandwich or cereal with milk

Travelling to competitions

It is important to plan ahead and pack food when travelling to events. The body needs energy in order to perform and only gets that with food. If you are going to be on the bus then you need to have something with you to eat. After the event, make sure that you have food to refuel on the ride home.

Do not go without food. You will be hungry, your body will be starved of energy and performance will suffer.

Make sure that you have something that you enjoy eating and that is easy to digest. Everyone is different, so choose something that works for you.

Tournaments

Just like travelling, it is important to eat throughout the day and in between competitions. Pack some snacks to eat between games in order to keep energy levels up, keep hydrated and recover in between games.

Make sure that you have something that you enjoy eating and that is easy to digest. Everyone is different, so choose something that works for you.

Hydration

The main form of staying hydrated throughout the day will be in the form of water. Water is readily absorbed and keeps the body functioning the way it should. Thirst is not a good indicator for hydration. By the time someone is thirsty they are already getting dehydrated.

For exercise that is lasting longer than 1 hour it can be helpful to drink a sports drink or eat something to get some electrolytes and calories replenished in order to continue.

After exercise it can be helpful to drink a sports drink and eat in order to rehydrate and start the repair process in order to recover from the workout.

Hydration prior to exercise

Drink water throughout the day

Drink 16-24 oz of within the hour of working out

Hydration during exercise

Drink water consistently every 15 minutes

Do not wait until thirsty to drink, by then your body is already dehydrated

Start drinking a sports drink or eating small snacks if exercise is longer than 1 hour

Hydration after exercise

Ideally, drink 24 oz of water for every pound lost

Or, drink 12-16 oz consistently for the next 2-3 hours after activity

Supplements

As long as you eat enough during the day, there is no need to take a supplement. A supplement is meant to help fill in areas that are not getting enough nutrients. As long as your body has enough nutrients, it does not need anything else.

If you feel that you need a supplement; that is a choice to be made with your parents, physician and qualified and certified dietician in order to find the best options.

Energy Drinks

Typical ‘energy’ drinks actually have very little energy. They are filled with caffeine and other stimulants that have the potential for negative side effects including dehydration, rapid heart rate, difficulty concentrating, fainting, tremors and worse.

There is no reason for healthy individuals to drink any type of energy drink. They will hinder performance and should be avoided.

Summary

As an athlete it can be daunting to have one more thing on your plate, literally. It is already challenging to think about school, homework, time with friends, practice, competition, training and now eating.

Remember, eating makes everything else easier. By eating a balanced diet it can help keep you alert and sharp throughout the day to help you perform at your best, both on the field and in the classroom.

Cayuga Medical Center

Sports Medicine and Athletic Performance

THE CENTER IS YOU

Strength and Conditioning

Warm Up

The goal of the warm up is to prepare the body for the workout to come. In order to do this we need to excite the nervous system, activate the muscles and prepare the mind.

A sample program involves dynamic stretching, speed preparation, jumping and then specific skills for that sport. This ensures that the body is primed and ready for the practice or the game.

Dynamic Stretches (10 yards)

Knee Grabs

Ankle Grabs

T walks/Airplanes

Toe/Heel walks

Forward/Backward/Lateral/Drop step or Pivot lunges

Spidermans

Leg Swings

Squats/Drop Step or Pivot Squats

Lateral band walks

Forward/Backward band walks

Vertical Jumps (5-10)

Alternate Lunge Jumps (10-20)

Pushups (5-10)

Pushups with T Rotation (8-12)

Speed Preparation

Wall Drills

Stationary Marching

Rhythm Marching

A Skips

B Skips

High Skips

Butt kicks

Bounding

Shuffles

Carioca

Speed Build ups

Accelerate-Decelerate-backpedal

Accelerate-Decelerate-pivot-shuffle both directions

Injury Prevention

Certain sports and positions are at greater risk of injury. For this reason it is important to understand what those injuries are and what to do in order to prevent their occurrence. There are exercises that can decrease the risk of injury to specific joints if they are done consistently.

Ankle

Single Leg Balance

Single leg Catch and Toss

Single Leg Hops

Single Leg Lateral Hops

Knee

Squat with Band

Depth Drops-absorb the landing

Vertical Jumps

Airplanes

Single Leg Squats

Skaters

Low Back

Planks

Side Planks

Plank to Pushup

Bird Dog

Bridge

Single Leg Bridge

Standing Band Flexion

Kneeling Band Flexion

Standing Band Rotation

Shoulder

Dowel Press

Dowel Rotation

Rear Delt Fly

I,Y,T

Scaption

Pushup Plus

Flexibility versus Mobility

Flexibility is the available range of motion around a joint. Mobility is the ability to move a joint throughout a range of motion. Flexibility is more static in nature and mobility is more dynamic.

Athletes have different needs when it comes to their flexibility. Some athletes are naturally more flexible than others. Flexibility and stretching does not prevent injury. It can temporarily improve the range of motion around a joint and it can feel good when muscles are tight are sore.

Mobility is required in order to get proper technique and movement to occur. A restriction in motion can alter movement and make athletes more susceptible to an injury.

Most joints also need to be stable and strengthening the supporting musculature will help to prevent injury and maintain the health of that joint throughout a season.

Static Stretching (2-3 sets of 30-60 sec per hold)

Static stretching is best performed at the end of a workout, game or strength session. Stretching prior to activity can result in decreased performance due to relaxing the nervous system prior to an event.

Strength Training

Participating in a strength training program is vital to improving performance and strength. High school athletes of both sexes benefit from participation. The focus in high school is to learn technique, develop basic proficiency and strength, introduce the athlete to the weight room and systematically increase the amount of weight that is lifted to foster adaptation.

Not all athletes will respond the same way to a workout. Some will have an easier time with some exercises over others and have faster gains than others. Sticking to a program can improve everyone's overall strength.

A program does not need to long or complicated and should be based on the goals of the sport, athlete and position. There are however, some exercises that most athletes should be comfortable performing

While the exercises are numerous for each variation and can involve bodyweight, dumbbells or barbells, the muscles worked are similar and will serve as the foundation of most strength programs.

Lower Body

Squats

Lunges

Bulgarian Split Squat

Romanian or Stiff Legged Deadlifts

Step up

Upper Body

Horizontal Press

Horizontal Pull

Vertical Press

Vertical Pull

Deciding on Sets and Reps

Sets are the number of times an exercise is performed in a session and reps is short for repetitions, or how many times a lift is performed per set.

Generally, higher repetitions develop muscular endurance and lower repetitions develop muscular strength. Athletes have different needs in different sports. While every athlete can benefit from improving their strength, not all athletes need to spend a lot of time lifting heavy. Too much of this can start to impede performance and lead to soreness and over training.

In high school athletes, performing between 4 and 6 exercises for 2-4 sets each will be adequate to develop strength, endurance and muscular size. Those athletes that want to build greater muscle will have to do more work. But, the majority of a team will benefit from as little as 8 total sets in a workout.

One of the reasons for this is that they are playing other sports and other activities that require their time and attention. A workout is only as good as the ability to recover from it. If athletes are constantly being asked to work hard they may start to wear down and overtrain, get injured or have decreases in their performance.

Sport	**Needs**	**Sets**	**Reps**	**special**
Football				
Lineman	power/strength	3,4	3,8	ankle, knee, back
Backs	strength	3,4	5,10	knee
receivers	strength/endurance	2,4	6,12	knee
Soccer				
Goalie	power/strength	2,3	3,8	knee
Forward/Defense	strength/endurance	2,3	6,12	ankle, knee
Midfield	endurance	2,3	8,15	ankle, knee
Volleyball	power/Strength	2,3	3,8	ankle, knee, back, shoulder
Cross Country	strength/endurance	2,3	6,15	ankle, knee
Basketball	strength/endurance	2,3	6,15	ankle, knee
Wrestling	strength/endurance	3,4	6,12	back, shoulder
Baseball	power/strength	2,3	4,8	shoulder
Softball	power/strength	2,3	4,8	shoulder
Track and field				
sprinters	power/strength	2,4	3,8	knee
middle distance	strength/endurance	2,3	6,12	knee
field	power/strength	2,4	3,8	shoulder

Conditioning

Each sport has its unique conditioning need. The majority of sports involve short duration of high intensity exercise followed by a recovery period, either active or inactive. In order for athletes to compete at their highest level they should train in manner that is similar to how they compete; train fast play fast, train slow play slow.

Doing a series of intermittent sprints for a specific distance followed by jogging, walking or standing for a series of repetitions can be an effective means of increasing overall cardiorespiratory endurance as well improving sport specific fitness.

The distance, number of sets and recovery periods vary per sport and can be changed or progressed to stress your athletes more or less depending on their fitness, time of the season and training goals.

Plyometrics

Jump training has many purposes for many teams and is a great tool. They can be used as part of a warm up, strength program, or conditioning program. The emphasis should always be on introducing the exercise and making sure that athletes use good form. There are a large number of available exercises to choose from depending on training goals.

Exercises

Vertical Jumps

Depth Drops

Box Jumps

Broad Jumps

Single Leg Broad Jump

Split Jumps

Alternating Lunge Jumps

Ankle Hops

Lateral Hops

Singe leg Hops

Single Leg Star Hops

Common Injuries and Treatment

Being physically active and playing sports carries an inherent risk or injury. While some injuries can be prevented, it is impossible to prevent everything. Proper training and conditioning prior to the season can decrease injury risk, but acute injuries can happen.

If athletes have not prepared prior to the season than they are setting themselves up for overuse injuries that can take a while to calm down and generally involve rest, active recovery or activity modification in order to truly subside.

Treatment for an acute injury involves RICE: Rest, Ice, Compress and Elevate the injured body part. If the injury is more severe and there is swelling or dysfunction then referring them to a sports medicine specialist for further evaluation and care is appropriate.

Ankle

RICE

ABC's

Calf stretch

Towel Scrunch

Balancing when able

Shin Splints

Ice

Calf Stretch

Towel scrunch

Side leg raises

Bridge

Core strength

Activity modification with less running and more cross training

Knee (Patellofemoral syndrome or pain around the kneecap)

RICE

Quadricep and hip flexor stretching

Side leg raises

Bridges

Squatting with emphasis on good form

Balancing

Activity modification with less running and more cross training

Hip Flexor or Groin

RICE

Gentle stretching

Side leg raises

Bridges

Mountain Climbers

Side leg drops

Activity modification with less running and cutting and more cross training

Shoulder

Rest, Ice

Scaption

External Rotation

Rows

Band pull aparts

Activity modification with less overhead activity

Cayuga Medical Center
Sports Medicine and Athletic Performance
THE CENTER IS YOU

Other Resources

Academy of Nutrition and Dietics. http://www.eatright.org/

Elite FTS. http://articles.elitefts.net/

Exrx.net. http://www.exrx.net/

Mayo Clinic. Overuse Injuries: How to Prevent Training Injuries. http://www.mayoclinic.org/overuse-injury/art-20045875

National Institute of Arthritis and Musculoskeletal and Skin Diseases. Preventing Musculoskeletal Sports Injuries in Youth: A Guide for Parents. http://www.niams.nih.gov/Health_Info/Sports_Injuries/child_sports_injuries.asp

Nutrition and Athletic Performance Position Statement. http://www.eatright.org/About/Content.aspx?id=8365

Stop Sports Injuries. http://www.stopsportsinjuries.org/

United States Anti Doping Agency. Optimal Dietary Intake Guide. http://www.usada.org/Diet