Gator Peak Performance Guide for Sport Coaches

An Outline of Training Philosophy for Building Strong, Powerful, and Healthy Youth Athletes

Athletic Performance 2018
Coach Haack, M.A., C.S.C.S
How to Use this Guide

This guide is intended to educate sport coaches concerning our training philosophy and the principles of strength and conditioning. To be truly informative, it must be comprehensive and detailed, but for the sake of brevity, it cannot cover the entire breadth and depth of our profession. Although brief in comparison to a full-fledged treatment of strength and conditioning, it is still a lot of information to comprehend. Please take the time to read the whole guide to ensure the greatest understanding of our philosophy and goals.

Table of Contents

- Introduction – page 3
- Philosophy – page 3
- The Performance Pyramid – page 4
  - Description – page 4
  - High Quality Movement Patterns – page 4
  - Total Body Strength – page 5
    - Factors of Strength – page 5
      - Genetics – page 5
      - Developmental Age – page 5
      - Mentality – page 6
    - Classic Linear Progression – page 6
    - Autoregulation – page 7
    - Advanced Periodization – page 8
    - A Note About Traditional 1 Rep Max Testing – page 9
  - Total Body Power – page 9
    - A Note about Training Olympic Lifts – page 10
  - Agility – page 11
  - Plyometrics – page 11
  - Peak Performance – page 12
- The Exercise Playbook – page 12
- Putting it All Together – page 14
  - Elements of the Plan – page 14
  - How to Use the Plan – page 16
- Conclusion – page 16
- Appendix – page 17
**Introduction**

This guide is for sport coaches, and anyone interested in building stronger, healthier youth athletes. The goal is to educate the reader about our staff’s approach to building strength, speed, and power while keeping our student athletes as healthy as possible. Training athletes should be an intelligent and intentional pursuit, and at SHP we want every student to understand why and how we train. After reading through the guide, you will hopefully have a better understanding of our department’s goals and how we achieve those goals.

**Philosophy**

**Guiding Principles of Athletic Performance**

- **Principle 1: Do no harm!**
  - Performance coaches should do everything in their power to prevent injury when training.
  - Attrition in the weight room is to be avoided at ALL costs!
  - This is accomplished by:
    - Appropriate exercise selection
    - Proper progression/regression of exercises
    - Sensitivity to the needs of individual athletes
    - Designing programs based on current abilities
    - Avoiding “one size fits all” doctrines and plans
    - Perfecting movement quality

- **Principle 2: Attempt to prevent harm from the rigors of sport participation**
  - Once we establish a safe training space, the next step is to prepare the athlete to excel at their chosen sport(s).
  - This is accomplished by:
    - Using progressive weight training to increase strength and power
    - Incorporating in-workout flexibility to improve joint range of motion and movement patterning
    - Performing comprehensive core training to stabilize the spine and create a platform for efficient energy transfer
    - Improving work capacity through progressive endurance training (when applicable)
    - Introducing nutrition, mental-skills, and positive lifestyle concepts

- **Principle 3: Help student-athletes meet their athletic potential and help them realize their athletic dreams**
  - When the student-athlete is confident they will not get injured during training, and they have established excellent movement quality, strength, power, range of motion, and endurance, they are then ready to maximize their athletic potential.
  - This is accomplished by:
    - Progressing to more complicated training methods
    - Introducing more advanced nutrition, mental-skills, and positive lifestyle concepts
    - Preparing for training beyond high school (when applicable)
The Performance Pyramid

Description
The performance pyramid provides a framework for building healthy, injury-proof athletes. Like a physical pyramid, it can only climb as high as the foundation allows. Establishing pristine movement patterns creates the soundest base for safely building strength, power, agility, and endurance. Once an athlete moves well, other parameters of performance can be enhanced. The performance pyramid looks like this:

High Quality Movement Patterns
The body can best display strength and power when basic, natural movement patterns are precise, consistent, and (mostly) unaffected by fatigue. Realizing the full benefit of any exercise requires a foundation of perfect movement. The patterns we seek to perfect are:

- The Squat
- The Hip Hinge
- The Lunge (multi-directional)
- The Bridge
- Push Patterns (vertical, horizontal, incline)
- Pull Patterns (vertical, horizontal, incline)

We perfect these patterns using two complementary methods:

1. Practice, Feedback, and More Practice
   a. We call them patterns because these movements must be repeatable. Practice helps engrain the movement in the mind of the athlete, so it can be done without thinking.
b. Oral and tactile feedback helps the athlete correct improper technique immediately and establish the pattern as accurately as possible.

2. Targeted Flexibility Training
   a. Sometimes a pattern cannot be established if an athlete has trouble achieving the position due to tightness across major joints (ankles, knees, hips, shoulders, elbows, and wrists).
   b. While we practice the patterns to perfection, we provide mobility exercises and stretches to improve range of motion. New range of motion allows athletes to achieve positions they could not perform in the past.

Total Body Strength
Developing high quality movement patterns inevitably strengthens the musculature, joints, ligaments, and tendons. Once movement quality is established, with the commensurate increase in strength and control, we can start concentrating on building greater amounts of strength. Perfect movement and proper development of connective tissue is required to gain meaningful levels of strength. Strength training with teen athletes requires careful planning, awareness of individual development, and patience. Every athlete will not progress at the same rate. This is due to many factors, such as:

- Genetics
  o Limb length and proportions give individuals different amounts of leverage based on the movement being performed. For example, those with long femurs (relative to their tibia) may have more difficulty squatting than those with advantageous proportionality of congruent femurs, tibias, and upper body.
  o Leverage is also affected by the position of a muscle’s attachment point on a bone, which can vary significantly among different individuals. As a result, some athletes will possess a mechanical advantage for a certain movement.
    - For example: think of the biceps as a drawbridge. The bridge can be drawn up more efficiently if the chain is attached farther from the fulcrum (point of rotation). Thus, the farther down the forearm that a biceps muscle attaches, the more mechanical advantage that individual will have during a biceps curl.
  o Muscle composition also contributes to absolute strength potential. An athlete with a large proportion of slow twitch fibers may be able to produce more force than an athlete with a high proportion of fast twitch fibers. Conversely, the fast twitch athlete would be able to move loads faster than their slow twitch counterpart.
  o Each individual has a unique hormonal environment. Athletes with a more anabolic hormone profile will more easily add strength and size compared with someone who has lower levels of the same hormones.

- Developmental Age
  o Developmentally, not all 14 year olds are the same age. Some have gone through puberty with its commensurate hormonal changes, growth, and increased physical maturity, while others will wait another year before they experience the same
transformation. Each athlete must be trained differently to avoid injuries during this extreme alteration.

- **Mentality**
  - Young athletes are developing their image of themselves, and have their own agendas and goals. Some aren’t willing to experience the necessary discomfort lifting requires to create appreciable strength gains.

With the above factors in mind, we must adopt strategies that protect the athletes while inducing the neural and structural changes that lead to gains in strength. That is accomplished using three established concepts: Classic Linear Progression, Autoregulation, and Advanced Periodization.

- **Classic Linear Progression:** This is the simplest approach to making anyone stronger. It requires that the athlete incrementally increase weight, reps, or sets every session. The greatest gains are seen when athletes can make manageable improvements, very consistently, over long time frames. There is a sweet spot that taxes the body enough for growth, but not so much as to induce debilitating soreness and prolonged central nervous system recovery. Little jumps eventually create huge gains over the course of a year or more with the added benefit of lower injury risk and more sustainable strength.
  - **Example 1:**
    - For this training phase, the athlete is asked to make incremental jumps every week
    - The repetitions per set go down to encourage increases in load

<table>
<thead>
<tr>
<th>Exercise</th>
<th>Wk1</th>
<th>Wk2</th>
<th>Wk3</th>
<th>Wk4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Front Squat</td>
<td>8</td>
<td>85</td>
<td>85</td>
<td>100</td>
</tr>
<tr>
<td>Wk1&amp;2: 3:1X1</td>
<td>8</td>
<td>95</td>
<td>105</td>
<td>110</td>
</tr>
<tr>
<td>Wk3&amp;4: 1:2X1</td>
<td>8</td>
<td>105</td>
<td>115</td>
<td>120</td>
</tr>
</tbody>
</table>

- **Example 2:**
  - Instead of increasing weight, the athlete must complete more repetitions each week at the same weight
  - The 4th week provides a reduction of repetitions so the weight can be increased

<table>
<thead>
<tr>
<th>Exercise</th>
<th>Wk1</th>
<th>Wk2</th>
<th>Wk3</th>
<th>Wk4</th>
</tr>
</thead>
<tbody>
<tr>
<td>BB RDL</td>
<td>8</td>
<td>75</td>
<td>75</td>
<td>75</td>
</tr>
<tr>
<td>Wk1: 3:2:1:1</td>
<td>8</td>
<td>75</td>
<td>75</td>
<td>75</td>
</tr>
<tr>
<td>Wk2+3: 2:1:3:1</td>
<td>8</td>
<td>85</td>
<td>85</td>
<td>85</td>
</tr>
</tbody>
</table>
- **Autoregulation**: This concept allows us to build tremendous strength without overstressing our athletes. Autoregulation essentially means they choose the load for any given set. Guidelines and parameters are provided so an educated choice can be made. This allows the lifter to push themselves within reasonable and safe limits. It also allows flexibility if a trainee isn’t prepared to push themselves that day. With all the demands and stresses placed on high school athletes, we must be aware of many different issues that may affect their ability to train at a high level. Those issues include: quality of sleep, quality/quantity of nutrition, depression, fatigue from other sports activities, social interactions, and sickness. The only way we can elicit the best from our athletes is to be sensitive to what is best for them on that given day. Prescribing a load or volume that they cannot do will not help them and may hurt them. Autoregulation allows us to push when appropriate and back off when necessary.
  - **Autoregulation at Work**: An Athlete Case Study
    - Athlete A and Athlete B both play linebacker on the JV football team. They are similar in height and weight. Both athletes have been weight training since they started at SHP.
      - **Athlete A**:
        - This athlete has sound nutrition, great sleep habits, low stress, and great relationships with their friends
        - He can continue to recover from each training session and, therefore, add more weight each week
        - His linear progression proceeds unhalted by external circumstances

<table>
<thead>
<tr>
<th>Exercise</th>
<th>Wk1</th>
<th>Wk2</th>
<th>Wk3</th>
<th>Wk4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Front Squat</td>
<td>8</td>
<td>125</td>
<td>145</td>
<td>150</td>
</tr>
<tr>
<td>+</td>
<td>8</td>
<td>125</td>
<td>145</td>
<td>150</td>
</tr>
<tr>
<td>Box Jump</td>
<td>8</td>
<td>125</td>
<td>145</td>
<td>150</td>
</tr>
<tr>
<td>No Arm Swing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wk 1: 3 x 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wk 2: 3 x 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wk 3: 3 x 6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Athlete B**:
  - This athlete has poor sleep habits, forgets to hydrate, procrastinates on homework so has higher weekly stress levels, and his girlfriend broke up with him over the weekend before his week 3 training session
  - During the week 3 session, we noticed that this athlete was struggling with his first set. He was asked to back off his weights to maintain form and safety. He recovered for week 4 and increased his weight that week

<table>
<thead>
<tr>
<th>Exercise</th>
<th>Wk1</th>
<th>Wk2</th>
<th>Wk3</th>
<th>Wk4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Front Squat</td>
<td>8</td>
<td>125</td>
<td>145</td>
<td>145</td>
</tr>
<tr>
<td>+</td>
<td>8</td>
<td>125</td>
<td>145</td>
<td>150</td>
</tr>
<tr>
<td>Box Jump</td>
<td>8</td>
<td>125</td>
<td>145</td>
<td>150</td>
</tr>
<tr>
<td>No Arm Swing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wk 1: 3 x 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wk 2: 3 x 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wk 3: 3 x 6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
- **Summary:**
  - Both athletes started the program on the same trajectory, but Athlete B was derailed by an emotionally taxing weekend and poor habits. He recovered, but ended the cycle 25 lbs. lower than his teammate. Autoregulation allowed him to continue to train through the stressful week and recovery for the next week of training. Had we demanded he lift a prescribed weight based on a formula, Athlete B could have been hurt or ended up severely under-recovered for week 4.

- **Advanced Periodization:** Classic linear progression can make most athletes very strong. Some may continue to see gains with this basic approach into college, as they continue to grow into adult bodies. Those who have trained with us for many years may need a more advanced approach to see progress. Advanced periodization requires an athlete to have at least two unbroken years of training and to have stalled on simpler progression plans. The athlete must have achieved a level of movement mastery under load and performed some max testing. We then directly prescribe the loads they will use based on sound scientific literature. Autoregulation takes a back seat but is always available if an athlete cannot perform the prescribed target weight. At this point, there is less chance that the athlete will be unable to recover due to their high level of work capacity. Advanced periodization builds fatigue over a longer time period, which allows accommodation to greater loads. Once accommodated, the athlete can then attempt to add load by testing.
  - **Example:**
    - This athlete has trained for 2+ years and has developed very good training and recovery habits
    - The athlete’s previous best lift in the front squat was 5 repetitions at 255 lbs., which converts to 300 lbs. for 1 repetition
    - As a more advanced lifter, we can start to prescribe the loads that the athlete will use during the session
    - The loading is based on a percentage of the 300 lbs. max
    - Below are the percentages prescribed for each set, which are scientifically validated for increasing strength for intermediate to advanced trainees
Below are the prescribed weights based on the percentage of the athlete’s 300 lbs. max front squat

<table>
<thead>
<tr>
<th>Exercise</th>
<th>Wk1</th>
<th>Wk2</th>
<th>Wk3</th>
<th>Wk4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Front Squat</td>
<td>150</td>
<td>160</td>
<td>170</td>
<td>180</td>
</tr>
<tr>
<td></td>
<td>175</td>
<td>190</td>
<td>200</td>
<td>210</td>
</tr>
<tr>
<td>Box Jump</td>
<td>80</td>
<td>90</td>
<td>100</td>
<td>110</td>
</tr>
<tr>
<td>NO ARM SWING</td>
<td>80</td>
<td>90</td>
<td>100</td>
<td>110</td>
</tr>
</tbody>
</table>

Starting at a lower weight, we build momentum toward a 5 lbs. personal record for the 5-repetition max for the front squat.

The prescribed weights ensure the athlete stays in the correct range for gaining strength.

The athlete will still be asked to autoregulate if needed, but for athletes with good training and recovery habits, it will be less likely that external factors derail the training cycle.

A Note About Traditional 1 Rep Max Testing

Athletes should not attempt a true one repetition max test until they’ve accumulated two years of consistent training. The most important reason why it is not prudent to max test is that it carries the highest level of risk during training, especially in team training scenarios. One rep max testing is also physiologically unnecessary for adding strength for new trainees.

Tested exercises (squat, deadlift, bench, etc.) require many training sessions to master. Furthermore, mastery at lower loads does not equate to mastery at higher loads. As described above, classical linear progression allows the body to adapt and grow while the exercise skill is honed. It’s especially important for strengthening joints, tendons, and ligaments that do not adapt to mechanical stress as fast as muscle tissue.

Many of the gains earned by strength training during the first two years of training can be attributed to skill acquisition and rewiring of the central nervous system. Of course, some improvements are due to hypertrophy, but for most, this is a negligible contribution. Essentially, with the proper progression, most athletes can see substantial changes in strength while their nervous systems adapt to moving greater loads. Heavy testing can disrupt the wiring process by stressing the central nervous system too much. When over stressed, the athlete can lose strength and be at greater risk of injury.

Total Body Power

Many sport outcomes are decided by who can produce the most power. If you can generate the same force as your opponent, but you can do it faster, then you have an advantage. We can specifically train for power once a proper foundation of movement quality and strength has been established. Fortunately, power is not developed in a vacuum, and therefore it is not neglected while the foundations are being laid. Power is a percentage of total strength. Studies show that the nexus between max strength and speed of movement (i.e. Power) is 60% of absolute strength for a given movement.
Example: There are two high school football offensive linemen of equal weight, height, and sport experience. Athlete A can front squat 300 lbs. for an estimated 1 repetition max (1RM). Athlete B can front squat 200 lbs. for an estimated 1 repetition max. Both athletes are capable of moving 60% of their 1RM at the same speed, 1 meter per second (m/s). So, Athlete A can move 180 lbs. at 1 m/s, while Athlete B can only move 120 lbs. at 1 m/s. Athlete A has the advantage. Furthermore, Athlete A can move 120 lbs. faster than Athlete B. Again, Athlete A has the advantage. Let us pretend that Athlete A is genetically predisposed toward having more slow-twitch muscle fiber. He is only capable of moving 50% of his 1RM at 1 m/s. Athlete B is genetically predisposed toward a fast-twitch muscle fiber composition. He can move 70% of his 1RM at 1 m/s. The math reveals Athlete A can move 150 lbs. at 1 m/s. Athlete B can move 140 lbs. at 1 m/s. Genetically gifted Athlete B is still at a disadvantage compared to the stronger Athlete A.

<table>
<thead>
<tr>
<th>Example 1</th>
<th>Athlete A</th>
<th>Athlete B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Front Squat Max</td>
<td>300 lbs</td>
<td>200 lbs</td>
</tr>
<tr>
<td>% of Squat Max that can be moved 1 m/s</td>
<td>60%</td>
<td>60%</td>
</tr>
<tr>
<td>Weight of Squat Max that can be moved 1 m/s</td>
<td>180 lbs</td>
<td>120 lbs</td>
</tr>
<tr>
<td>Power Advantage</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Example 2</th>
<th>Athlete A</th>
<th>Athlete B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Front Squat Max</td>
<td>300 lbs</td>
<td>200 lbs</td>
</tr>
<tr>
<td>% of Squat Max that can be moved 1 m/s</td>
<td>50%</td>
<td>70%</td>
</tr>
<tr>
<td>Weight of Squat Max that can be moved 1 m/s</td>
<td>150 lbs</td>
<td>140 lbs</td>
</tr>
<tr>
<td>Power Advantage</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

Younger athletes experience the largest increases in power when they get stronger. Our programming doesn’t neglect power building exercises, but incorporates them judiciously to complement their growing strength. Power movements like the Clean or Snatch require significant time to teach properly. Furthermore, it requires much more flexibility and stability than most strength building movements, especially in the shoulder, elbow, and wrist. Time spent teaching pristine power movements reduces time for training strength and increases the risk of injury while athletes figure out how to move barbells fast. Since, our time with young athletes is limited, we opt for movements that provide great returns on investment, can be intuitively learned, and reduces the chance for injury. Exercises like med-ball throws and box jumps can greatly enhance power, reaction times, and athleticism, while also being extremely low-risk when programmed properly.

**A Note About Training Olympic Lifts**

There is an appropriate time and place for the Olympic lifts (Snatch, Clean & Jerk, and their derivatives), which are great tools for developing power and athleticism. These movements demand tremendous flexibility, speed, and kinesthetic awareness, and thus are often used only when athletes are mature and patient enough to learn proper technique. As many of our training groups include a mix of novice and experienced athletes, it can be difficult to implement the Olympic lifts at the high school level without incurring too much risk. Teams that perform Olympic lifts are usually smaller in number, have more
mature athletes, and have earned the right to practice the lifts through diligent training of the traditional strength lifts (Front Squat, Romanian Deadlift, Deadlift).

As noted above, quality movement takes time to develop and the Olympic lifts are the most difficult movements. The full benefit of the movement can be achieved only when done extremely well; producing max power requires perfect technique.

**Agility**
Agility can be described as the ability to accelerate, decelerate, and change directions. Agility training gets a lot of focus from the mainstream fitness industry, Instagram, and Facebook. This is because it can be novel and fun, as demonstrated by highly advanced athletes who make it look easy. The truth is that most young athletes do not need specific agility training. Practicing and playing their chosen sport(s) more than make up for a lack agility training in the gym.

The ability to accelerate, decelerate, and change directions requires great strength. Acceleration requires the athlete to produce high levels of force to propel their body in any direction. Deceleration requires the same athlete to produce even higher levels of force to slow or stop the momentum they created. When athletes change direction quickly, they must combine deceleration strength and acceleration strength into a short window of time. No amount of agility ladders, cone drills, or games of tag can increase strength levels to achieve elite levels of agility.

In lieu of specific agility training, the prudent approach is to strength train while learning the movement patterns necessary for agility. That includes starting positions for sprinting (which depending on the sport can be varied and vast), body positions for stopping and slowing momentum, and the correct postures for changing direction. When deconstructed, change of direction is the ability to stop or slow one’s momentum, then re-accelerate at a different angle. Breaking down complex movements allows for greater retention of what is taught and reduces the risk of injury while learning something new at high speeds.

**Plyometrics**
Everything written about agility is also relevant for plyometric training. Box jumping, hurdle hopping, bounding and other such jumping tasks, all require some base level of muscular strength to excel at the movement. Plyometrics also put tremendous stress on the joints, ligaments, and tendons, so time must be taken to make sure these structures are strong enough to withstand the strain of repeated bouts of training.

We can incorporate low intensity plyometrics at a very early training age. They must be progressed carefully to avoid damaging growing structures. Landing mechanics, 1 leg hopping, broad jumps, and low box jumps are all examples of low intensity plyometric exercises that elicit big gains with minimal risk. As strength, coordination, and structural integrity of joints, ligaments, and tendons improves, more intense activities can be added to the program.
Peak Performance
The best outcomes occur when athletes adhere to the peak performance pyramid and prioritize their training in the correct order. Movement quality alone can lead to immense changes in an athlete’s career, regardless of whether they retire as high school seniors or as 40-year-old professional veterans. In the high school setting, we are usually lucky to work with a group of kids for two years. We are extremely lucky to work with some for 3 to 4 years. During that time, kids have many breaks: vacations, travel ball, sickness, in-season competitions, injury, forced downtime, and other life commitments.

It is imperative then that the time we have is not wasted. Skipping steps of the pyramid in an attempt to artificially accelerate progress actually sets the athlete back significantly, as one must descend back down to break bad habits, then climb back up again. College coaches are aware of this problem. In fact, they would prefer that an athlete have no high school coaching rather than some poorly executed coaching that the college coach then has to fix. SHP students are way ahead of their peer-group, because they receive thoughtful and consistent coaching while they attend school here.

In all honesty, peak performance for high schoolers is a relative term that depends heavily on the student athlete’s goals and desires. We try to fully prepare them for the rigors of life beyond high school, whether then continue their athletic career or not. Peak performance truly means that we are giving them the opportunity to be their best, every day, for every endeavor.

The Exercise Playbook
Exercise choice represents a large portion of the Athletic Performance toolkit. In the sports world, it is analogous to the vast playbook of many football programs. Plays are usually designed and implemented based on the personnel executing the plays, the strategy devised against the opponents, and the expertise of the coaches installing the game plan. Higher level concepts and complicated plays require the athletes to be mature enough to absorb and execute the play. It also requires the coaches be competent enough to properly teach the plays.

For athletic performance, the coach must make sure the athletes are mature enough to handle the complexity of the prescribed exercises. This pertains to individuals and the whole group in team settings. The coach must also consider the end goal (opponent strategy) when prescribing exercises. For example, if the goal is to make young athletes stronger, the power clean is not the most effective exercise for achieving that goal. They would benefit more from basic strength builders like squats, deadlifts, and RDLs. Lastly, the coach must be aware of his or her own limitations when prescribing exercises. There may be a lack of proper equipment, space, or time. Additionally, the coach may be better at teaching one movement over another and therefore it may be more advantageous for both the coach and the athlete to play to their strengths.

Luckily, at SHP, we are very comfortable with many different training modalities and methods. The limiting factors tend to be the level of the athletes (i.e. a senior laden team vs. a rebuilding year with many underclassmen). Space and time also play a role in exercise selection. Cleans take time to properly teach, so teams that train three times a week throughout the year will have more learning opportunities than a team that trains only in-season, two times per week. Also, it is more difficult to teach large teams
complex movements because the coach to athlete ratio increases, reducing the amount of time that each individual athlete has to receive effective coaching. Additional drawbacks of training bigger teams may include less time to practice the movement as more people must complete the session; more athletes in the space create more distractions while trying to learn new movements; young athletes tend to easily lose focus in noisy, busy spaces; for boys, competition and egos tend inflate the weight they believe they are capable of doing, which increases the risk of injury; and a lack of space must be considered for safety.

As written above, the level of the athlete is a large factor for exercise selection. The athlete must have the motor control to handle certain movements, the strength to execute them, and consistency to perform the movement correctly every time. Many athletes have met some of the criteria for performing a movement, but may be lacking in one or more critical areas that will always make the movement more dangerous and/or less effective for that individual. Please examine the appendixes below for comprehensive lists of criteria for performing higher level movements.
Putting It All Together

Below is an example of a training program designed for an SHP athlete. The program incorporates many of the previously discussed concepts. This section will discuss each element of the plan and how it’s implemented in the gym.

![Image of a training program]

Elements of the Plan

- **Header**: we build each program for the specific needs of the sport. This particular program is an off-season plan for girls’ volleyball.
- **Name**: each athlete has their own card to record their progress and make notes.
- **Phase**: for record keeping, it is prudent to know what phase of training this plan represents. AA+ is a designation for Anatomical Adaptation, meaning that the emphasis is on preparing the body for the rigors of continuous training.
- **Position**: most young athletes have the same program as their teammates, but we may modify the program when one position has somewhat different functions than the other positions. For example, this card may be modified for a libero, or a soccer card might have a modified plan for the goal keeper.
- **Calculated 1RM**: once the trainee reaches a level of strength that can safely be tested, the number can be recorded in this space for record keeping and programming purposes.
• **Prep:** most sessions will begin with the prep box. It includes soft-tissue work (foam rolling), mobility, and activation (warm-up). This box is usually truncated to soft-tissue work and mobility when the athletes come directly from practice (because they are already active and warm)

• **Exercise:** exercises are chosen based on a needs analysis of the sport
  
  o **Main Movement:** this exercise owns a whole box because it is the most important exercise for that block. In this case, the exercise is paired with a low-level plyometric. The numbers (2:2:1:1) represent the desired tempo for the movement. Each number corresponds to a specific part of the main movement. So, in the squat, starting from the standing position, the first number would represent the time to get from top to bottom, the second number represents the time spent frozen at the bottom, the third number represents the time from the bottom of the movement to the top, and the fourth number represents the time in-between repetitions.

  o **Paired Exercises:** the next three exercises are to be done as (active rest) for the squat. The usually consist of three of the following exercise subgroups: core, a supplementary exercise (in this case a hamstring dominant movement we call the 1 Leg RDL), mobility, activation, and stabilization.

• **Wk1-Wk4:** each program is usually three to four weeks in duration. Each column represents the repetitions and sets required each week. How these are manipulated week to week is based on our training goals.

The bottom of each day has a special section where we can monitor recovery. The area is also available so the athletes can take any notes about their training session.

• **Sleep:** we recommend 8+ hours of sleep per night (although this does not show an entire week’s sleep pattern, it provides a snap shot so we can have a discussion if we consistently see numbers lower than 7 hours)

• **Hydration:** we recommend a minimum of ½ their body weight in ounces

• **Nutrition:** for boys, we are looking for a range of .7g-.8g per pound of body weight. For girls, we ask for number of protein containing meals per day

• **Stress:** a subjective number to help us gauge the total stress load of the athlete

• **Soreness/Fatigue:** another subjective number to help us gauge recovery. It also helps the athletes get more viscerally in-touch with their bodies.
Miscellaneous Elements:

- **Body weight**: this box has only been used for the boys, since being heavier is an advantage in many boys’ sports. The benefit is not as strong for girls’ sports, so strength enhancement is the main goal.
- **Quote**: the quote is used to focus the group, create comradery, induce excitement, and inspire the athletes.
- **Misc. Block**: we leave space for educational purposes, and goal setting, so the athletes can see key information everyday.

**How to Use the Plan**
The athletes always work top to bottom, one block at a time. A block consists of a main exercise and 3-5 paired exercises. The exercises complement each other, so they must be performed together. They also constitute as active rest for the main and supplementary exercise(s). Depending on the phase, different exercises will have different levels of emphasis based on the amount of sets performed in the block. They repeat the top to bottom process until all reps and sets are complete. Then they may move on to the next block on the program.

Each block represents a different need based on their sport. Every block should balance all the other blocks based on push-to-pull ratios, hip-to-knee ratios, and core equilibrium. Research shows that a balanced athlete is less prone to injury, especially of the non-contact variety.

**Conclusion**
The process of making a strong, powerful, and healthy athlete is not an easy one. Each individual is different, which makes a cookie-cutter approach untenable. Balancing health, strength, and sport prowess relies on many factors: correct technique, appropriate loading of volume and intensity, proper recovery from training, sport practice, nutrition, hard work, resilience, passion, maturity, a growth mindset, and dedication to meeting one’s potential. Some of those factors are within our purview as coaches, but many are not. We bring all our resources to bear on the factors within our control, so we can help every student at SHP reach their goals and meet their potential on and off the field, in and out of the gym, in school, in life.
Appendix

The Front Squat
Squatting is a fundamental movement pattern that can be trained for strength. High strength in the squat is correlated with high performance in many sports. To squat correctly and safely, the following criteria must be met:

- **Ankle mobility** that allows squatter to sit flat-footed, with hip below the knee while maintaining a flat back at the bottom of the movement
- **Knee stability** and proper patellar tracking
- **Groin flexibility and strength** to allow knees to track in proper position over the toes
- **Lateral hip strength and control** to stabilize the knee and assist in proper knee tracking during descent and ascent
- **Balance of mobility** for hamstrings, hip flexors, anterior core, and low back extensors to ensure at the bottom of the movement the hips do not tuck, resulting in a rounded low back under load
- **Ability to brace core** under load to protect low back and internal organs
- **Thoracic mobility** to maintain upper back posture while under load
- **Shoulder mobility** and stability to elevate the elbows and maintain the most efficient rack position
- **Elbow mobility** to allow enough flexion to maintain proper rack position
- **Wrist mobility and stability** to maintain rack position without pain in the lower arm segment

The Romanian Deadlift (RDL)
The RDL is a valuable exercise that reinforces the fundamental hinge pattern. It also teaches the portion of the deadlift that occurs above the knees. RDLs build strength in the posterior chain: hamstrings, glutes, and low back. For proper development and safety, the following criteria must be met:

- **Ability to perform a perfect body weight hinge**
  - Feet under the hips, pointed forward
  - Shins vertical
  - Weight balanced in the feet as hips drive back
  - Perfect back posture throughout hinging movement; maintaining neutral lumbar, thoracic, and cervical curves
- **Hamstring flexibility** to allow hips to glide back while maintaining back and neck posture
- **Ability to brace core** to protect low back under load
- **Ability to engage latissimus dorsi** to maintain bar position near center of mass and stabilize the upper back
- **Ability to engage glutes during ascent** to assist the stretched hamstrings and protect the low back at the top of the movement

The Hang Power Clean
Power cleans develop the ability to open the hip as quickly as possible while moving a load. With the proper amounts of strength, the hang power clean can develop power through the hip, which is highly correlated with many explosive sport movements. Although there are many ways to improve hip power, the power clean remains at the top of the list of many strength and sport coaches. The following criteria must be met to perform the movement safely and effectively:
For the Hinge portion of the lift:
- **Ability to perform a perfect body weight hinge**
  - Feet under the hips, pointed forward
  - Shins vertical
  - Weight balanced in the feet as hips drive back
  - Perfect back posture throughout hinging movement; maintaining neutral lumbar, thoracic, and cervical curves
- **Hamstring flexibility** to allow hips to glide back while maintaining back and neck posture
- **Ability to brace core** to protect low back under load
- **Ability to engage latissimus dorsi** to maintain bar position near center of mass and stabilize the upper back

For the Pull portion of the lift:
- **Ability to maintain neutral back posture while violently pulling with the posterior chain**
  - Requires violent and coordinated activation of hamstrings, glutes, spinal erectors, latissimus dorsi, and trapezius to move the bar vertical
- **Internal rotation mobility of the shoulders** to allow elbows to drive toward the ceiling before the catch
- **External rotation mobility of the shoulders** to allow the elbows to drive around the bar for a successful catch and rack on the deltoids

For the Catch and Rack portion of the lift:
- **Ability to brace core** under load to protect low back and internal organs
- **Thoracic mobility** to maintain upper back posture while under load
- **Shoulder mobility and stability** to elevate the elbows and maintain the most efficient rack position
- **Elbow mobility** to allow enough flexion to maintain proper rack position
- **Wrist mobility and stability** to maintain rack position without pain in the lower arm segment