A PERSONALIZED SYSTEM OF INSTRUCTION MODEL TO MAKE THE HIGH SCHOOL ATHLETE LAND IN THE PIT

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A PERSONALIZED SYSTEM OF INSTRUCTION MODEL TO MAKE THE HIGH SCHOOL ATHLETE LAND IN THE PIT

A Project

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Abstract

of

A PERSONALIZED SYSTEM OF INSTRUCTION MODEL TO MAKE THE HIGH SCHOOL ATHLETE LAND IN THE PIT

by

Matthew Scott Gilbert

This specific coaching manual has been designed using the Personalized System of Instruction intended for aspiring high school pole vault coaches. This manual will touch on regulations and equipment that can make the pole vault safer and emphasize the technical components of the run and take-off that a coach must emphasize to ensure that the pole vaulter safely penetrates and lands into the pit. This manual will use the Personalized System of Instruction or PSI to ensure every athlete is working at their own pace and will include multiple drills and coaching points/progressions to help a pole vaulter effectively takeoff consistently in order to minimize the possibility of any dangers arising.

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Chapter 1

INTRODUCTION

Pole vaulting is a sport that has the potential to be very dangerous, especially when an athlete has a coach that gives improper instruction. According to Mueller (2007), there have been 18 deaths between 1983 and 2006. According to Putnam (2003) there is one pole vault related death per year, more than any other sport. Hannay (2003a) attribute these pole vault deaths due to head, neck, and spine injuries sustained because the vaulter doesn’t land into the padded landing pit and lands on the ground or another hard surface. Most often pole vaulters will miss the pit as a result of not fully penetrating into the pit from their point of takeoff. Other times they will travel laterally or diagonally from their point of takeoff and miss the pit. These statistics make it imperative for coaches to be able to coach the fundamentals of the sport so that their athletes may stay safe, and also perform at their optimal level.

Not every pole vault coach at the high school level has experience pole vaulting. USA Track and Field provides various coaching level certifications to help aspiring coaches receive the requisite knowledge to coach events like the pole vault. There are three levels of the USA Track and Field coaching certifications with each level more specific and detailed towards coaching a specific event. However, these certifications are not required of high school coaches on a national scale. Additionally, high school coaches who want to become more knowledgeable about their event area are required to have a certain coaching experience level before progressing through to level II and level III coaching certifications, which are much more detailed towards a specific event area. Therefore coaches get a very broad description of the pole vault at level I and this is inappropriate for an event as dangerous as the pole vault. Coaches are then expected to
coach the pole vault for at least two years with limited knowledge about the event until they are able to get some better guidance on how to coach the event better.

Statement of Purpose

The purpose of this project is to provide a specific coaching manual using the Personalized System of Instruction for aspiring high school pole vault coaches who lack experience either competing in or coaching the pole vault. This manual will touch on regulations and equipment that can make the pole vault safer and emphasize the technical components of the run and take-off that a coach must emphasize to ensure that the pole vaulter safely penetrates and lands into the pit. This manual will use the Personalized System of Instruction or PSI include multiple drills and coaching points/progressions to help a pole vaulter effectively takeoff consistently in order to minimize the possibility of any dangers arising.

Significance of the Project

While pole vaulting manuals currently exist, pole vault manuals today are specifically aimed at increasing vertical performance and give less insight how to better help a pole vaulter get into the pit. Current manuals mainly focus on the technical components of the pole vault while only instructing on what is technically correct, they give little to no insight on how a coach should approach coaching the technical aspects of safety with drills or progressions of these drills. These manuals also fail to address common mistakes or problems pole vaulters encounter and how a coach should correct them.
Definition of Terms

Runway-
Strip of track that the pole vaulter runs on.

Box-
Metal box eight inches below ground level where the pole is planted into.

Pit-
The large pad where the pole vaulter is supposed to land.

Crossbar-
The object that the pole vaulter is supposed to jump over.

Standards-
The large metal stands on either side of the pit that hold the crossbar. The standards can be adjusted in competition to anywhere in between 45-80 centimeters from the back of the box.

Pole-
What the pole vaulter uses to jump up into the air.

Penultimate Step-
The next-to-last step that hits the ground before the takeoff step. For a right handed vaulter, it would be the right foot that touches the ground just before the left foot hits the ground at the point of takeoff.

Left or Right-
Used to indicate how many times the pole vaulter’s takeoff foot (left foot for the purpose of this project because all analysis will be of a right-handed pole vaulter) hits the ground during their run. If the takeoff foot hits the ground eight times during the run, it would be called an eight left. Left is more typically used due to the fact that right handed pole
vaulters take-off of their left foot and there are more right handed pole vaulters than left
handed pole vaulters.

Grip-
Refers to the handgrip on the pole. Typically referred to the top hand in regards to the
height of the grip of the top hand on the pole.

Takeoff mark-
The spot where the vaulter jumped off of the ground. Marked from where the toe hits.

Check Mark-
Spot on the runway either on the third or fourth to last step should come into contact at to
ensure the accuracy of the run. Also known as a mid mark in certain manuals.

Head Wind-
Wind blowing into the vaulter’s face as they are running down the runway, slowing the
vaulter down.

Tail Wind-
Wind blowing behind the vaulter, pushing them faster down the runway.

Cross Wind-
Wind blowing laterally to the runway pushing the vaulter to the side as they are coming
down the runway.
Scope of the Project

This project will instruct coaches on how to implement a successful pole vault program at their high school by successfully coaching the approach run and take-off.

Pole Vaulting is a very technical sport that takes a long time to perfect, it has many different technical phases that all need to be addressed in order for a pole vaulter to be able to jump to their highest potential. However, this project will limit itself to drills strictly used for the run and the take-off. The run will also be addressed briefly before the take-off because the run will determine whether or not the take-off will be successful.

This project will give recommendations on how to correct common technical mistakes seen at the high school level but will not give every possible recommendation to help every possible type of athlete the coach may have. For correcting these mistakes, the most basic and successful correction strategies will be used. In addition, correcting these mistakes will be based off of a right-handed pole vaulter in order to avoid confusion. Most of the coaching points will be a neutral command and won’t be biased on whether the athlete is right handed or left handed. For the few instructions and cues that are specific towards right handed vaulters, the left handed pole vaulters will have to read the instructions and recognize that they will have to reverse the right hand cues to left hand cues and visa versa.

Information for this manual will be gathered from scholastic research journals, coaching blogs, track and field manuals, newspaper articles, and track and field websites. This manual is intended for aspiring high school pole vault coaches with little to no experience at any level with pole vaulting but is still applicable for coaches with pole vault experience.
Chapter 2

REVIEW OF LITERATURE

For the purpose of this project, there are three components a coach must focus on in order to be successful: safety regulations, identifying the proper mechanics/technique, and proper instruction of technical components. These areas will be reviewed in the following sections.

Rules and Regulations

Newell (2003) lists the dimensions of the landing pits that are mandatory at the high school level of the pole vault as “19’8” wide in the back X 16’5” wide in the front X 20’5” length X 26” height and the front pieces of the pad must extend four feet from the base units and a common top pad must cover the entire pit” (p. 1). Most all pits sold today are at the high school regulation size however, an older pit that is still being used may need to be measured to ensure the safety of the athletes.

Poles are classified by their length and their stiffness measured by their flex number or their tested maximum weight bearing capabilities. At the high school level a vaulter may not use a pole that is rated at below their bodyweight. However, Rambo (1998) states an important fact that a coach may need to have a pole vaulter use a softer pole because that particular pole vaulter may not have enough speed or strength to move a pole at their bodyweight up past vertical to get them into the pit. Ultimately the goal is to have a pole vaulter grip as high as possible on the stiffest pole possible and be able to move that pole past vertical, even if that pole happens to be rated below their bodyweight. It is better than having vaulters try and jump on a pole that might not allow them to land safely into the pit.

There has been growing talk of helmets becoming mandatory at the high school level for pole vaulters. However, there is some conflicting evidence to show that it may be more of a
hindrance than a help (Hannay, 2003b). Hannay (2003a) illustrates the three most common ways a catastrophic head, neck and spine injury can occur: a vaulter misses the pit and hits their head on the ground or a hard surface surrounding the pit, a vaulter bounces off the pit and then hits their head on the ground or a hard surface surrounding the pit, or the vaulter falls back into the box while they are upside down landing straight down on their head. Hannay (2003a) states that a helmet would not save anybody’s life in any of these scenarios. Additionally some vaulters may have a “perceived feeling of invincibility” while they have their helmet on making them more likely to do more dangerous attempts (Hannay, 2003a). Hannay (2003b) also states that even when a vaulter lands into the pit wearing a helmet, they are more likely to hurt their neck due to the “increased surface area and additional leverage to the axial loading of the cervical spine” (pp. 59).

Technical Components

According to Rambo (1998) pole vaulting is a complex movement but if the coach can study the sport, the use of some basic principles can help produce safer as well as higher results. In order to make sure that the vaulter will land safely into the padded landing pit, the vaulter’s number one priority must be to roll the pole up past vertical with a high pole bend (Chang, 2010). According to Chang (2010), there are many factors that must be considered when trying to roll the pole up to vertical: “length and stiffness of the pole, speed and direction of forces placed upon the pole, the angle of the pole at the takeoff, the distance between the takeoff point and the back of the box (or vertical plane), any additional forces added form centripetal force and muscular activity on the pole, and the location of the center of mass prior to the pole rolling up to vertical”(p. 37).
The Run

Bowwerman (1974) states the run should be at a distance to where the athlete reaches their full controllable speed just before the take-off and so that the athlete can bring that speed into their take-off (1974). It’s very important for an athlete to make sure that they run the same way every time to ensure that they are taking-off from the same position on the runway for every jump. An effective way of establishing a consistent run is to use check marks on the runway.

A check mark is a mark on the runway typically placed where the vaulter’s third or fourth to last left hits the ground. The left foot is counted throughout the entire run every time it contacts the ground. The reason why the left foot is only counted is because a right-handed vaulter will takeoff their left foot at takeoff and the counting of the takeoff foot helps the vaulter “count down” to takeoff to set up their proper takeoff (Buchholtz, 2003). This also helps the coach in a number of ways in addition to their vaulter’s check mark from telling how far their vaulter should be running and to see exactly how their timing of their pole drop is before they takeoff.

The use of a check mark is very helpful in identifying whether or not an athlete is changing their run and if so where. Using a check mark validates the consistency of the athlete’s run. Buchholtz (2003) recommends using a checkpoint at the 4-left point to guarantee a more consistent run.

Pole drop

According to Chang (2010) the pole drop greatly influences the positioning of the body’s angle during the run and more importantly at the takeoff. If a pole is being dropped too early it can put strain on the pole vaulter to have to try and carry the long pole out in front of themselves while they are sprinting causing them to either compensate by leaning back for counterweight or to be pulled too far forward due to lack of strength in holding the pole. If the pole is dropped too
late, the pole vaulter will most typically lean back in an effort to give themselves more space between themselves and the box to allow the tip of the pole to make it into the box (Chang, 2010). Ideally, the pole vaulter wants to be as tall and vertical as possible throughout the run and especially at the takeoff. Therefore Chang (2010) suggests that the pole drop should feel weightless because it’s falling in a timed fashion to hit the back of the box precisely when the vaulter is about to takeoff. This lets the vaulter feel as if they don’t need to carry and support the pole with a great amount of force allowing them to keep a tall and upright posture throughout their run and up into their takeoff. According to Chang (2010) the pole should drop approximately at the third to last left or the last six steps.

**Penultimate Step**

Ferry (1998) stresses the importance of the penultimate step, or the next-to-last step that hits the ground. During this penultimate step the vaulter’s body will drop a little bit allowing them to create a greater extension off of their take-off leg as they are coming into the take-off. While this is important in predicting a pole vaulter’s takeoff success the penultimate step can’t be too low otherwise the takeoff step will be too far in front of the pole vaulter’s desired takeoff point, making more likely that the vaulter will takeoff under and likely cause the takeoff foot to have a longer amortization period (Chang, 2010).

**The Takeoff**

Fraley (1995) analyses the takeoff of the pole vault thoroughly because it most clearly dictates the success of the athlete. Fraley (1995) argues the use of a “free takeoff” helps a pole vaulter maintain their momentum gained throughout the runway up and throughout the takeoff instead of having the pole hit the box slightly before the takeoff, slowing the pole vaulter down as a result. A free takeoff is when the vaulter has both hands extended up in the plant position and is already beginning to jump up into the air as the pole tip is coming into contact with the back of
the box (Fraley, 1995). This ensures that the maximum amount of force can be brought into the pole to help it bend and rotate forward to an upright position rather than already having the resistance of the pole being pushing against the vaulter before they have left the ground. In addition, Ferry (1998) points out that because the pole vaulter is taking off of the ground before the pole contacts the back of the box, they are able to reach a higher vertical angle with the pole before the pole tip contacts the back of the box allowing the pole to roll up to vertical easier. A free takeoff makes it a lot easier on the vaulter’s back because they don’t have any immediate pressure on their back when initially taking off the ground (Ferry, 1998).

**Pedagogy**

Pedagogy is the science and art of instruction, in this case it refers to how the pole vault should be instructed to ensure the maximum retention and transfer of skill to the athletes. There are several aspects to sport pedagogy that must be considered in order to ensure its success of this manual: the personalized system of instruction, motor learning, practice time, appropriate practice, content and skill progression, feedback, and the psychology or fear which is something that is more specific to pole vaulting than sports in general.

*Personalized System of Instruction*

Personalized System of Instruction was designed by Fred Keller in 1968 to allow the students progress through the learning content at their own pace. There was no predetermined lesson plan for each day, each student picked up where they let off of the previous day and progressed through to the next skill or lesson as they master the previous skill (Eyre, 2007).

*Foundation Dimensions*

PSI puts a great emphasis on the coach providing a large amount of feedback to their athletes to allow them the greatest chance to learn. The importance doesn’t lie with the coach’s ability to manage the practices but rather to make sure the athletes receive the
tools necessary to excel and then let them excel at their own pace with the coach providing them with appropriate feedback throughout the process. The learning resides more with the athletes teaching themselves with the coach providing the athletes with reinforcement and feedback to perform the task properly and then it’s up to the athlete to ensure that they have learned the task (Chase & Houmanfar, 2009).

**Teaching and Learning Patterns**

The coach has very little involvement compared to the direct instructional model. The coach essentially provides the athlete with a text, picture, movie or a combination of any of the three of how to perform a task and will provide the athletes with a progression on how to learn that task. It will be the students’ responsibility to then take the progression given to them and perform the tasks on the written progression in the order that they are written and not progress to the next portion of the task until they have adequately mastered the current skill as it’s stated, this is known as self pacing. It’s the coach’s job at this point to provide adequate feedback to the athlete to instruct them of what they are doing well and what they could do better. This use of feedback to the athletes has been shown to enhance the athletes ability of repeating the skill correctly compared to them merely trying to copy the skill as it’s presented with no feedback from the coach (Gonzalez, C., Anderson J., Culmer, P., Burke, M., Mon-Williams, M., & Wilkie, R., 2011)

**Teacher Expertise and Contextual Need Dimensions**

The coach’s expertise doesn’t need to be too mastered in a specific skill set due to the fact that they are largely relying on external sources (text, diagrams, photos, videos, CD-ROMS) to help illustrate what to specifically do. The coach does need to be organized enough to create a progression plan for their students to follow after they have received
adequate information about the skill from the external sources. The coach will have to provide a substantial amount of feedback to their athletes because the athletes will be performing these tasks based off of their interpreted knowledge of the task and it will be the coach’s responsibility to ensure that the athlete’s understanding of the task is correct and they are also performing the task correctly (Martin, T. Pear, & Martin, G. 2002). This shouldn’t be hard because the coach’s time spent managing the class is very small leaving plenty of time for the coach to provide their athletes with the feedback they need.

Verification of Instructional Process Dimensions

The coach needs to make sure that they monitor how they spend their time coaching the group. The coach can’t be spending too much time managing the practices or evaluating mastery attempts; most of the time needs to be spent providing feedback to their athletes. To verify that the athletes are behaving appropriately the coach needs to check to make sure that they are following the task structure progressions that were set up by the coach and they are staying on task with each skill or task that they are trying to accomplish (Mahoney & Jane, 2005).

Assessment of Learning Dimensions

Within each model or “progression” there are peer reviewed assessments of each task section that the athlete completes to inform the coach of how many attempts it took to achieve the required number of successful attempts prescribed by the coach. This way the coach has quantifiable data to see if the task difficulty is appropriate, the average time taken for the group to accomplish a task, and what athletes might need extra attention and feedback to help them out more with the task (Crystal & Joseph, 2008).
These assessments are also helpful to the athletes who are better able to track their progress and get a better objective assessment of how they are doing. They can compare their current scores with the scores of the past to see their level of improvement. They are also very helpful to those athletes who are peer reviewing, verifying the mastery of the skills practiced. Athletes who are more active in peer reviewing are more likely to gain a better understanding of the skill being conducted providing them with a greater probability of mastery of that skill (Crystal & Joseph, 2008).

Contextual Modification Dimensions
Students must be able to comprehend the materials presented to them in their instruction. Instructional models need to be written at the appropriate grade level so the students are able read and comprehend what the instruction model is telling them. There must be adequate space and equipment available to the athletes to allow them to participate independently without having to wait for someone else to finish (Jenkins & Keefe, 2001).

Motor Learning
There are different stages of learning that are important to know in preparing a PSI program: cognitive, motor, and autonomous stage.

Cognitive
This is where the students will gain the requisite knowledge about what it is they are doing and the basic parameters of how and why something should be done. People in this stage benefit most from demonstration and modeling (Schmidt & Wrisberg, 2000). In a PSI program it would be important to put in many diagrams and pictures to help the athletes model themselves after the picture in front of them. If possible it would be most beneficial for the athletes to be able to watch a video of the aspects they are going to be
performing, that way they aren’t just looking at a stationary snapshot that is supposed to depict an entire movement (Schmidt & Wrisberg, 2000).

Motor

This follows the cognitive stage where the athletes take the knowledge gained from the cognitive stage and uses it towards performing the motor skills learned. The main focus of this stage is trying to perform the skills that are presented to the athletes in the manner that they are intended (Schmidt & Lee, 1999). This stage is where PSI can be extremely helpful due to its progression of drills, criterion tasks, and challenge tasks that the athlete progresses through at their own pace. The drill progressions presented to the athlete offers the athlete to get the requisite amount of drill work necessary for their specific needs in order for them to grasp the physical concept of what it is that they’re trying to achieve. The criterion and challenge tasks are tasks that help build the athletes confidence that they’re getting better at performing the present task as well as make sure that they aren’t progressing too rapidly onto the next skill and neglecting the adequate amount of time towards the present skill.

Autonomous State

Following the motor stage where the athlete is trying to perfect their skill, the autonomous stage is where the skill has been practiced so much in the motor stage that the athlete can perform that skill automatically without having to focus too much on that specific skill (Gabbett & Masters 2011). This is an important stage in the learning process when using the PSI model, when the teacher or coach can identify when the athlete has performed the task correctly and has shown that it has become automatic, it’s then time for the athlete to try to accomplish the next skill in the progression.
**Practice Time**

Practice time is defined as the time that the athlete is engaged in the subject matter and performing the skills asked of them by the coach, this isn’t necessarily the time from when practice starts to when practice is dismissed (Ennis, 1990). Practice should minimize the amount of time the athletes are standing around, waiting in line, sitting out of drills, or engaging in disruptive behavior, all of these show that there isn’t adequate engagement to get the athletes better (Duda, 1996). Practice should be structured to increase the amount of time that the athletes are thinking about their pole vaulting and what it is that they need to be doing to learn/perfect their skill (Duda, 1996). Historically this is something that is very difficult for a pole vault practice because there is typically only one runway and one pole vault pit per school so while one pole vaulter is practicing the others are waiting in line. With PSI, the coach can have the athletes performing a certain task progression that they must complete while waiting in line before they are able to make an attempt on the runway; this ensures that the athletes are staying engaged and getting more practice time inn the amount of time given to them.

**Appropriate Practice**

When structuring practices at the high school level, every year there are going to be both beginning and returning athletes of multiple ability levels. The practices need to be specific to the ability levels of the athletes in the practice otherwise athletes who are just beginning might be frustrated when they are trying to perform a skill that is way above their ability level, or even worse they are liable to hurt themselves (Silverman 1985). One the other side, experienced athletes can’t be doing the same entry level drill that has become to easy for them, they need to be challenged with more complex movements in order to improve (Griffin, Mitchell, & Olsin, 1997). With PSI students are given a list of skills and drills they’re able to perform that are personalized
to their ability level progressing to more challenging tasks as soon as they complete the challenge or criterion tasks presented to them.

Task and Content Progression

The progression of tasks within a practice can have a direct effect on how well the athletes learn a specific movement, when setting up a practice progression there are three fundamental categories: blocked, random, and varied practices. Blocked practice is practicing the same task in the same manner over and over again and getting a great deal of repetitions. Random practice is performing a number of different tasks in random order and challenging the athletes focus on the task at hand (Lee & Magill, 1985; Goode & Magill, 1986). Varied practice is performing variations of the same skill aimed at accomplishing the same goal (Schmidt, 1975). Blocked practice is better for athletes in the cognitive stage while random practice is better for athletes in the motor stage, however this is more for athletes performing less complex tasks and not pole vaulting (Lee & Magill, 1985; Goode & Magill, 1986). Varied practiced wouldn’t be something more suitable for pole vaulters trying to learn in the motor stage due to it’s complex movements.

Feedback

A major benefit of PSI is that because the teacher spends so little time organizing and managing the group, they are left with much more time providing feedback to the athletes. Feedback is a very useful tool in learning the pole vault because the movement patterns in the pole vault are very complex and unnatural making it difficult for a beginner to discern whether or not they are performing the drill or vault properly. Therefore it’s much more beneficial for a pole vaulter to receive constant feedback while they are leaning the pole vault rather than feedback every other attempt or so (Wulf, Shea, & Matschiner, 1998). This constant feedback is especially useful early on the learning stages of the athletes development and shows that the greater the
feedback early on the greater the chance of the athlete developing a self-error detection to help themselves later (Wulf, Shea, & Matschiner, 1998).

**Blocked v. Serial Feedback**

When providing feedback to athletes the coach has the choice of giving blocked or serial feedback. Blocked feedback is giving feedback to only one specific aspect of the performance throughout the practice regardless of anything else the athlete accomplishes does during the attempt. Serial feedback is the coach varying what they provide feedback on from attempt to attempt giving the athletes variety on what it is that they’re working on. Due to pole vaulting’s complex movements, it makes it difficult for the athlete to change what they’re focusing on from attempt to attempt therefore it’s more beneficial to use a blocked feedback program when giving feedback to the athletes (Wulf, Horger, & Shea, 1999). This way the athletes can discern whether or not that specific focus was any better or worse than the one before it. PSI task progressions must be very gradual and continuously built off of the previous skill learned and not introduce a completely different skill, that way the athlete’s focus isn’t too far off of what they were previously focusing on.

When providing instruction to others, it’s important to be aware of not only what you’re communicating but also how you’re communicating what you want the athletes to perform. What the coach has the athlete focus on during the performance has a direct relationship to the overall success of that attempted performance. There are two fundamental foci when learning a kinesthetic task, internal and external focus. Internal focus of attention refers to the athletes body movements and external focus of attention refers to the external environment that the athlete focuses on to validate their performance, in this case the pole in their hand, runway, pit, and crossbar are all potential
things the athlete could focus on during their performance. In studying the overall learning retention of a new skill between two groups of athletes (internal focus group and external focus group), the external focus group was more effective in performing the new skill with greater efficiency as well as showing higher rates of overall retention (Wulf, Hoess, & Prinz, 1998). This instructs the PSI prompts to direct the athlete’s attention toward their external environment as much as possible when learning and performing a new skill.

In PSI, the use of visual examples of what’s appropriate for the given task is one of the biggest tools that makes PSI so successful. Key focal points can be addressed and communicated from the beginning prior to the athlete ever attempting the task. This creates a better likelihood that the athlete will be more aware of what they should be focusing on and more likely to diagnose the problem if they don’t perform the task as intended (Eckrich, Widule, Shrader, & Maver, 1994; Jordet, 2005). These visual examples can be in the form of drawings, diagrams, pictures, or even video. It’s very important to note that once these visual examples and/or visual feedback have been implemented, that they are not removed suddenly because it’s likely to illicit a drop in the athlete’s performance due to their dependency on the materials presented to them (Ivens, Marteniuk, 1997).

Fear

Fear is something that can be very dangerous to a pole vaulter if they let it affect their behavior. Fear can evoke a fight or flight response that can cause the pole vaulter to do something that they aren’t supposed to do during their run and into the takeoff, possibly putting them in harms way. It’s important to denote the types of fear and the possible ways to alleviate them.
**Physical Threat of Fear**

Fear of hurting oneself is a legitimate concern for pole vaulters considering its history of injury and death. It’s important to note however that this fear is a direct result of the athlete’s self-efficacy level (Cartoni, Minanti, & Zelli, 2005; Levin, 1991). Therefore with the proper motor development through a carefully organized practice plan, the athlete’s fear can be managed to a level that is less detrimental to him or her.

Fear can cause people to have perceptual bias of height in moments of extreme fear (Clerkin, Cody, & Proffitt, 2008). This can cause the athlete to feel that they are trying to accomplish something outside of their ability level when they perceive a bar height that is “too high” and might illicit a more intense fight or flight response during the pole vault.

Anxiety is a physiological response to fear that include increased heart rate, breathing, tension, perspiration among other physiological responses that if too intense, can lead to poor performance. A positive way of regulating anxiety is through self talk; there is a very high correlation with the type of self talk someone is performing and that person’s anxiety level (Conroy, D. E., & Metzler, J. N., 2004). Self affirming statements such as “you can do this” reduce anxiety levels whereas negative statements such as “I’m in over my head” can increase anxiety and make it that much harder to regulate. Positive reinforcers like you can do this should help the athletes manage their fear, the more often the coach is providing positive reinforcers, the more likely the athletes themselves will stay positive with their self talk thereby decreasing their anxiety levels.

While fear can be detrimental if experienced in extremes, fear can also help aid in the learning process. A particular skill can be learned if the individual faces a direct consequence of doing something improperly. On a later attempt the individual should be more focused and determined to perform the task properly in order to avoid that potential consequence (Miller,
The focus could be on performing something previously learned more proficiently or this fear avoidance can help aid in learning a completely new skill. This fearful consequence is a direct result of the skill itself, not a result of the coach punishing the individual for a undesirable performance. For example, a pole vaulter who lands too shallow in the landing pit may have evoked an intense fear response in thinking that they weren’t originally going to make it into the pit. On the next attempt they should be more likely to focus on making sure that they execute a proper run and takeoff to fully penetrate into the pit in order to avoid that feeling of fear.
Chapter 3

METHODOLOGY

The purpose of this project is to provide a pole vault specific coaching manual using the Personalized System of Instruction designed to help coaches at the high school level with little to no experience with the pole vault. The technical training aspects of this manual will be taken from analysis of multiple track and field coaching manuals written by well-known and respected coaches from around the country.

This coaching manual will focus on educating novice and experienced high school coaches on proper technique and how it will produce not only optimal performance, but more importantly safe results. The following outline will show the structured order of the manual and what to expect from it.

The progression model designed is intended to help the vaulter learn the basics completely before progressing to any drill that could produce any fear inducing response that could be developed into a bad habit. Additionally, this progression will ensure that the run and the takeoff will be mastered before progressing to any drills where the athlete could hurt themselves. All too often athletes are impressed with pole vaulting for its daredevil appearance and they want to immediately get upside down on the pole. The athlete is going upside down before they have established a strong habit of ensuring that they are consistently landing in the pit; potentially developing bad habits with their run and/or takeoff in making it much harder to redirect their focus of their takeoff later on. With this progression model, the athlete must complete the entire progression before they begin to swing upside down, and when they do progress to swinging upside down, they will have an effective run and takeoff to ensure that they will consistently be landing in the pit.
I. Pole Vault Safety
   a. Regulations
      i. Pit size
      ii. Proper pole selection and progression

II. Common Errors in the Pole Vault and How to Identify Them

III. Instructions for using PSI
   a. Static Holds
   b. Grass Vaults
   c. Sand Vaults
   d. Mini Hurdle Runs
   e. Pole Marching
   f. Pole Runs (no drop)
   g. 20 in 20
   h. One, two, three…Plant, two, three
   i. Pole Runs with Pole Dropping
   j. Pop Ups
   k. Slide Box
   l. Takeoffs

Photos and diagrams will be used to help diagram the pole vault pit and poles. A video demonstration will be used to show the technical components of the drills.
Chapter 4

A PERSONALIZED SYSTEM OF INSTRUCTION MODEL TO MAKE THE HIGH SCHOOL ATHLETE LAND IN THE PIT

By

Matthew Scott Gilbert

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Introduction

This specific coaching manual has been designed using the Personalized System of Instruction intended for aspiring high school pole vault coaches. This manual will touch on regulations and equipment that can make the pole vault safer and emphasize the technical components of the run and take-off that a coach must emphasize to ensure that the pole vaulter safely penetrates and lands into the pit. This manual will use the Personalized System of Instruction or PSI which includes multiple drills and coaching points/progressions to help a pole vaulter effectively takeoff consistently in order to minimize the possibility of any dangers arising.

These drills and coaching points are taken from personal conversations and coaching manuals made by collegiate coaches like: Alan Launder (former Australia national pole vault coach), Jan Johnson (1972 Olympic bronze medalist), Scott Slover (formerly at UC Berkeley), Bob Slover (formerly at Fresno State), Pat Licari (University of Washington), Tom Hays (University of Kansas), Spencer Chang (University of Hawaii), Brian Yokoyama (Mt. San Antonio College), Terry VanLaningham (Sacramento State), and Kris Mack (University of Cincinnati).

This specific PSI manual utilizes two fundamental principles that there are never more than three focus cues per drill used and that there must be at minimum an 80% success rate in the drill in order to progress to the next drill. In some other cases there must be a 100% success rate in the drill in order to proceed to the next drill.

This manual is very easy to use and is designed for both the coach and the athlete to use in the development of safer pole vaulting. Athletes will be able to learn at their own personal pace to ensure each athlete is neither held back nor left behind during a practice setting due to the ability level of the group. Specific tables will available for both the coach and the athlete to use in monitoring and documenting the development of the athletes’ progress. Athletes will be given
video recorded descriptions and demonstrations on how drills should be properly executed and will later be given the chance to perform those drills themselves. The coach will also be provided with specific explanations of the drills and progressions within the manual.
Pit Dimensions

Over the past ten years there has been a lot of scrutiny with pole vault and its level of safety. As a result pole vault pits have been increasing in their dimensions in order to provide a larger area for the athlete to land on in case something goes wrong. The minimum pole vault pit dimensions are 19’8” wide in the back, 16’5” wide in the front, 20’5” long, mats are 26” tall with a top cover pad that connects the entire pit. To see the proper pit dimensions see Figure 1.

While this manual is stressing the importance of jumping into the center of the pole vault pit versus increasing the pole vault pit’s dimensions, the new dimensions of the pole vault pit does aid the coach in finding new ways to identify problems with each pole vault by analyzing the areas of the pole vault pit that the athlete lands on. If the athlete lands in areas of the pit other than where they are supposed to land, the coach can easily draw conclusions about the pole vault itself without even having to see the pole vault attempt. This manual will further provide checkmarks of identifiable areas of the pit that the coach can see to dissect problems that may be arising with the pole vault.
**Pole Vault Pit Dimensions**

19’8” Minimum Width

16’5” Minimum from back of the box

“Coaches Box”
Outlined on the top pad 8’x10’
Starting 3’6” from the back of the box

20’5” Minimum total Depth

16’6” Minimum front pad width

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**Figure 1. Landing Pit Dimensions**

This diagram is an aerial view of a pole vault pit. It is imperative that the pit is at least this big in use for practice. Additionally, there can’t be any surrounding concrete or hard surfaces around the pit, if there is, there must be some additional padding over these problem areas to ensure that athlete’s aren’t getting hurt if they land near that area.
**Pole Selection and Progression**

This is a vital component to pole vaulting, if an athlete is holding too high and/or is on too stiff of a pole, then they are likely to perform an unsuccessful and dangerous pole vault. If the athlete is on too soft of a pole, they might have the threat of possibly breaking a pole or even completely clearing the pole vault pit and landing past the landing area on a hard surface. See Figure 2 to see where to look for the pole’s measurements to ensure athletes are on the correct pole.

When beginning this personalized system of instruction, the drills performed will be with a low grip height, and the poles will not bend. As the athletes progress through these drills, the grip height will get higher and poles will eventually begin to bend. Some basic rules in pole selection are paramount to keep pole vaulting safe. Athletes always need to select a pole that is rated at least at their bodyweight. It’s illegal for athletes to jump on a pole rated below their bodyweight.

Athletes will unlikely use one pole for their entire season so it’s important for there to be a systematic progression. Start off with the grip low and there are three basic responses if the pole is too small for the athlete, they either need a higher grip, a stiffer pole, or a longer pole.

**Raising Grip Height**

If the drill is a straight pole drill, then the athlete will only need to move their hand grip height up if needed; they should never need a stiffer pole due to the fact that they’re straight poling in the drill and they shouldn’t need a longer pole unless they are already holding at the top of their current pole. The athlete will need to raise their grip up when the pole moves past vertical very quickly and the athlete is be unable to perform any technical aspects of the vault
once off of the ground. Raising the handgrip will slow the pole’s rotation to vertical and provide the athlete with adequate time for the remainder of the vault.

If the drill has the pole bending with the athlete landing in the pit, the athlete will move their handgrip up if they are holding low on the pole while moving the pole quickly past vertical with a high bend and landing on the back edge of or past the coaches box. However the athlete will not raise their grip if they land on the back edge or past the coaches box if they have a low bend, if they were to raise their grip after that, their pole would likely bend even more at a low angle and run the risk of the pole breaking.

Increasing the stiffness of the pole and keeping the grip height the same would be the better move in that particular circumstance.

It’s very important that if someone’s grip is being raised that hand grip increments aren’t increased by anything greater than the width of the athlete’s palm or hand. Any grip progressions greater than one hand at a time would put the athlete at risk of not moving the pole into the pit.

**Using a Stiffer Pole**

Increasing the stiffness of the pole would only be used in a drill where the athlete is bending the pole. Someone would need a stiffer pole if they were landing past the coaches box while holding at the top of the pole. It’s advised that pole stiffness is only increased by five pounds of load capacity at a time anything greater and the athlete may not move the pole into the pit. Athletes would continue to move up in stiffness in poles until they have jumped on a pole that is rated at least 10 pounds heavier than their bodyweight; from there the athlete would then begin to jump on longer poles. When jumping on a longer pole, the pole will need to bend at a higher angle making it harder to move the pole into the pit, if the athlete can jump on a pole rated 10 pounds over their weight, they have demonstrated that they can produce enough force to move a longer pole that is rated at their bodyweight.
Using a Longer Pole

If the drill is a straight pole drill, someone would only need a longer pole if they were already holding at the top of the pole and moving it past vertical too quickly. They would then use a pole that is no more than six inches longer and raise their grip slightly on the longer pole. If the athlete used a pole more than six inches longer than the previous pole, the pole would be too difficult to move into the pit and the athlete could be putting themselves at risk.

If the drill has the pole bending with the athlete landing in the pit, they would move to a longer pole if they were jumping on a pole rated at least 10 pounds over their bodyweight and landing on the back edge of or past the coaches box while taking off with a high pole bend. It’s very important that they are jumping on a pole rated at least 10 pounds heavier than their bodyweight before moving up to a longer pole, otherwise the athlete can hurt themselves if they move to a longer pole too soon.

When moving to a longer pole, make sure that the pole is no more than six inches longer than the previous pole and is rated ten pounds lighter than the previous pole. The athlete will have their grip height exactly the same as it was on the shorter pole at first and then can proceed to move their grip up later if needed. The longer pole will move past vertical slower even when the grip height is the same due to the longer pole’s higher placement of its sail piece requiring the pole to bend at a higher angle than the shorter pole.

Moving Down to a Shorter or Softer Pole and/or Lowering Grip

It can sometimes be beneficial to the athlete to either lower their grip on a pole, or move to a softer pole. This is done when the athlete is unable to move the pole effectively past vertical and continues to have difficulty moving the pole even after technical instruction is being used. If an athlete has two consecutive performances of being unable to move the pole past vertical, the athlete should move their grip down one handgrip if they are performing a straight pole drill and
they can either move their grip down when performing a bending pole drill or they may move to a softer pole provided that the softer pole doesn’t rate below their bodyweight.
Figure 2. Pole Measurements

The area outlined by the rectangle is the measurement of the pole and is located at the top end of the pole. This measurement indicates the length of the pole (fourteen feet, seven inches) and the maximum load (140 lb person). It is important that someone doesn’t jump on a pole rated for below their bodyweight. Additionally it’s unsafe for an athlete to tape over this area and grip at or above this measurement.
**Common Problems with the Run and Takeoff**

**Slowing Down**

This is one of the worst things an athlete can do, it results in a complete loss of potential energy. Athletes will begin to slow down their run in the last few lefts before they takeoff. This is typically caused by one or more of the following: the athlete lengthens out their stride believing they are too far away from their takeoff mark and consequently slow themselves down, the athlete runs too fast in the first few lefts of their run and then lose their tempo from their run as they approach the end of their run, and/or the athlete is too focused on other technical aspects (ie. Pole drop, plant, or takeoff) and they subconsciously slow down their run in an effort to give them more time to focus on what they’re worrying about.

**Not jumping up into the takeoff**

Not jumping into the takeoff means that the pole will not efficiently move up to vertical. The trajectory of the pole will be very low and consequently have a very low bend, this is dangerous to the pole possibly breaking as well as the athlete possibly not moving the pole past vertical and landing somewhere other than the pit. This problem will be evident if the athlete’s takeoff is where it’s supposed to be yet the pole has a very low bend and/or the athlete’s hips dramatically swing out in front of themselves off of their takeoff.

**Late Plant/Late Pole Drop**

A proper plant (accompanied by a proper takeoff) helps ensure that the athlete’s energy created down the runway will be converted into the pole and move the pole past vertical. When the plant is late, it takes away some of the potential energy created in the pole vault and depending on how late the plant is can cause the pole to not move past vertical. A late plant can be identified when the athlete’s pole is hitting the back of the box and they still don’t have both arms extended overhead. Another identifiable aspect of a late plant is the roundhouse plant;
athletes will circle their right arm behind their body and then move it upward overhead in stead of keeping the right hand slightly in front of the body and then move it overhead for the plant and takeoff.

**Misaligned Plant**

A misaligned plant will send the athlete diagonally or laterally off the takeoff. A misaligned plant is when the athlete will have their arm either out to the right or moving towards the left as the pole tip hits the back of the box. The athlete will travel in the direction to where their top arm is directed (if out to the right the athlete will travel right; if moving towards the left the athlete will travel left). It’s very important that the athlete focus on keeping their right hand overhead as they hit their plant.

**Inconsistent run**

This is one of the most common problems associated with high school athletes. Athletes will change the manner of their run and consequently takeoff from either a different position or takeoff from their desired position but sacrifice their speed in order to steer themselves towards that takeoff point. This change can be at any point in the run which is why it’s important to have a check mark on the runway to identify where the change was made, either before the checkmark or after it. Once the location of the problem with the run has been identified, a proper adjustment can be made with that information.

**Poor Carry**

A poor carry can misalign the athlete’s shoulders as they are running towards their takeoff and can even slow the athlete down. A poor carry can be identified by the athlete having their right arm dropping under and/or behind their right hip as they’re running and/or their left arm is across their body with their left elbow at the same height or higher than their left hand. Ideally the athlete wants to have their right hand on the right hip with the left hand centered out in
front of their chest with the left forearm underneath the pole supporting the pole as they’re running.

**Running low**

Running low is characterized by the athlete running with their hips in a low and flexed position where the athlete never fully extends through their hip in their running mechanics. This decreases the potential energy that the athlete can bring down the runway as well as creates a lower pole angle at the point of takeoff due to the athlete being shorter than they should be; this lower pole angle means that the athlete must work even harder to get the pole past vertical.

**Taking off under**

Taking off under is where the athlete will takeoff with their foot past their desired takeoff point. This slows down the athlete before they takeoff the ground due to the pole tip already contacting the back of the box and pushing back into the athlete. This also takes the athlete’s hip out in front of them causing the athlete to loose their drive into the pole. This is a very easy thing to discover by merely looking at where the athlete’s takeoff foot contacts the ground. Depending on their run and whether or not it was consistent the athlete and or the coach can make the proper adjustments to fix the problem by either moving their approach and or changing some aspect of the athlete’s run (drive out the back, tempo, speed, or speed transition).

**Diagnosing the problem based off of the landing area**

When watching someone, it can be difficult to see everything within the few seconds it takes to perform a vault. Where the athlete lands can also be very helpful is diagnosing what issues if any were present during the vault. Refer to figure to figure 3 outlining the landing pit diagnosis.
Pole Vault Pit Diagnosis

Area 1 - (Dangerous) Athlete is at risk of either landing in the box, the runway, or off the front of the pit. The pole will typically stall out (or stop at the its vertical point) before the athlete lands in this area and is caused by one or more of the following problems: lack of speed, right arm isn’t overhead at the takeoff, plant is late, roundhousing pole drop, taking off under, holding too high on the pole, using too stiff of a pole. Athlete may have to use a softer or shorter pole.

Area 2 - (Dangerous) Pole will typically stall out before the athlete lands in this area and is caused by one or more of the following problems: Lack of speed, taking off under, holding too high on the pole, using too stiff of a pole. The athlete may have to use a softer or shorter pole.

Area 3 This is a safe area and is precisely where the athlete wants to be landing.

Area 4 (Dangerous) The athlete is at risk of jumping off the side of the pit and can land on the hard ground. This is cause by one or more of the following problems: Right arm isn’t overhead at the takeoff, late plant, roundhousing pole drop

Area 5 (Potentially Dangerous) Athlete is at risk of jumping over the pit and landing on the hard ground. This is typically caused by one of the following: jumping on too soft and/or too short of a pole for that approach’s speed, or by jumping with a low takeoff angle and/or blocking out with the left arm. Regardless of the cause, the athlete will need to either raise their grip, use a stiffer pole, or use a longer pole.

Figure 3. Landing Pit Diagnosis
The PSI program’s instruction for use for the coach

Before starting your training with your athletes, read this entire manual and watch the entire video. You do not need to memorize any of this information, however it’s good to have a general idea ahead of time of what you’re athletes are going to be doing during your practices.

Everyday you’ll need to make sure that you’re facilities are ready for any and all drills that can be performed for practice. You’ll need to have: an open field with either grass or field turf, a sand pit raked with the sand tilled, a section of track and/or runway that is at least 40 meters long for athletes to run along with a tape measure running along side the runway or lane, you’ll need to have a selection of poles for your athletes to choose from (none of them can be rated below your athlete’s body weight), and you’ll need to have a legal sized pole vault pit with a runway that extends at least 100 feet from the pit and a measuring tape running along side the runway. Make sure that you have enough copies of this manual to hand our to each of your athletes on the first day of practice and be sure to also have a laptop and/or a television somewhere nearby to play the video demonstrations of each drill.

On the first day of practice, hand this manual to your athletes and instruct them to follow the instructions specified. Make sure that you also have a copy of this manual so that you may refer to them when you are providing feedback to your athletes. Have the athletes begin their PSI program and be sure to provide plenty of feedback to your athletes and answer any questions that they may have regarding any and all of the drills. You’ll likely need to remind the athletes that they will need to be evaluating each other throughout these practices. You’ll likely not have anymore than ten athletes so you should be able to monitor all of them quite well so make sure that the athletes are focusing on what their worksheets are specifying and make sure that their partners who are checking their technique are also focusing on the proper aspects of the drill as well. As athletes finish a drill make sure they’re recording their progress in their personal
progress chart and not progressing to another drill until they have fully completed the mastery task as specified by their worksheet for that particular drill. You should also keep a personal progress chart of each individual athlete for your own record keeping.
**The PSI program’s instruction for use for the athlete**

In order to learn the run and the takeoff elements of the pole vault effectively, use this PSI program as follows. Take your personal progress chart and begin with a teammate starting with the first drill in the progression (static holds). Read a copy of the static hold worksheet and view the video chapter titled “static holds” and complete the drill as the worksheet requests and using your teammate to verify that you’re completing the drill as intended. When you have satisfied the worksheet’s requirements, you may advance to the next drill in the progression using that drill’s worksheet and video demonstration. Note that some of these worksheets have multiple variations of the same drill primarily through using a longer run into the drill. As you complete the criterion for each drill, make sure you log your progress on your personal progress chart and report to your coach if you have any problems with any of the drills in this manual. If you have any questions regarding the progressions or the drills in them be sure to ask your coach.
## Personal Progress Chart for Pole Vault

| Practice day | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
|--------------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| static holds |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| grass vaults 2 steps |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| sand vaults 4 steps |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| mini hurdle runs |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| pole marching (no drop) |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| full speed pole runs |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| half speed pole runs |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| pole marching (half speed) |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| pole marching (full speed) |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 1,2,3, Plant 2,3 (marching) |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 1,2,3, Plant 2,3 (half speed) |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 1,2,3, Plant 2,3 (full speed) |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 5 left pole runs (half speed) |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 5 left pole runs (full speed) |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 7 left pole runs (half speed) |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 7 left pole runs (full speed) |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 3 left pop up (straight pole) |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 4 left side box |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 4 left takeoffs |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 5 left side box |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 5 left takeoffs |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 6 left side box |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 6 left takeoffs |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 7 left side box |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 7 left takeoffs |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |

**Name:**

Figure 4. Personal Progress Chart
Pole Grip

This is the most basic component to the pole vault and is often time over looked. If an athlete has an improper grip or carry, then it is likely to set a chain reaction of further problems that the pole vaulter may have.

Needs: A pole vault pole.

Description: In order to properly learn how to grip, the athlete must place the pole horizontally square in front of themselves at hip height, placing their right hand on the pole with their palm facing outwards and the athlete’s left hand on the pole with their palm facing towards their body. From this position, the athlete keeps the right hand loose and next to their right hip, raises their left hand to the center of their chest with their left forearm underneath the pole in a supporting position with both arms relaxed. Pat Licari (2007), the pole vault coach from the University of Washington feels that this is an aspect of the pole vault that shouldn’t be overlooked. Licari (2007) believes that this pole carry position enables the athlete to run more relaxed as well as be able to drop the pole efficiently to set up a powerful plant and takeoff. Tom Hayes from the University of Kansas agrees with Licari that if the left arm (for a right handed vaulter) is parallel to the ground and isn’t perpendicular then there is a greater likelihood that the athlete will let the pole travel behind themselves slightly as they come running toward the takeoff and this opposing pole movement will subsequently slow the athlete down just before their takeoff.

Common Errors: There are three basic errors with the pole grip, the first is that the athlete feels the need to position the pole in a straight line pointing directly down the runway; this places the athletes left arm to come too far across their body and turns their shoulders away from the pit. The athlete must keep their focus on keeping their left hand in line with the center of their chest in order to fix this problem.
A second common mistake is having the left arm higher than the left hand when trying to hold the pole, this leaves the athlete trying to hold the pole too much during the run and can affect their body angle of their run depending on how strong or weak the athlete’s upper body is. The athlete should focus on keeping their left forearm underneath the pole at a vertical angle, this lets the pole rest on the athletes skeletal frame and requires less energy for the athlete to hold the pole allowing them to later bring their energy to other aspects of the pole vault.

A third common mistake for the pole grip and carry is that the athlete will have their right arm below and/or behind the right hip usually with the right elbow straight, this creates a sinking feeling with the pole once the athlete begins their run which is contradictory to the tall running posture that the athlete is trying to achieve. The athlete must have their right hand right next to their right hip and have the right elbow in a flexed position. Note that just because the elbow is flexed, it doesn’t mean that the athlete is exerting that much force to flex their elbow, in fact, both arms should be quite relaxed in order to ensure that the athletes posture is maintained as they run down the runway.
### Pole Grip

**Drill: Static Holds (High Carry)**

**Equipment needed:** 1 pole

<table>
<thead>
<tr>
<th>Performance Cues:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Right hand next to left hip with right arm in a flexed position</td>
</tr>
<tr>
<td>2. Left arm underneath the pole in a supporting position</td>
</tr>
<tr>
<td>3. Left hand in front of the center of the chest</td>
</tr>
<tr>
<td>4. Pole tip up high</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Learning Tips</th>
</tr>
</thead>
<tbody>
<tr>
<td>The pole should feel as if it’s resting in your hands rather than you trying to hold the pole up with your arms.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Common Errors and Their Corrections</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Right arm is straight with the right hand below and/or behind the right hip</td>
</tr>
<tr>
<td>(Loosen the grip with the right hand and keep it on the hip)</td>
</tr>
<tr>
<td>2. Left arm is over the top of the pole</td>
</tr>
<tr>
<td>(Relax the shoulders and bring left elbow underneath the left hand)</td>
</tr>
<tr>
<td>3. Left arm is across the body trying to point the pole tip straight forward</td>
</tr>
<tr>
<td>(Bring the pole slightly across the body with the left hand in front of the chest)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Criterion Task (self checked)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Find an area to yourself and raise the pole to the proper high carry position five times in a row correctly for five seconds each with your hands in the proper place every time.</td>
</tr>
<tr>
<td>Once you have successfully completed five consecutive pole carries in one practice session, you may advance on to the next drill. Log your progress of successful attempts on your personal progress chart.</td>
</tr>
<tr>
<td>Once you have successfully completed three consecutive practices completing this drill as intended, you may than begin your next practice on the following drill in the progression. Log your progress of successful attempts on your personal progress chart.</td>
</tr>
</tbody>
</table>

*Figure 5. Pole Grip*
Grass Vaults

The first series of this straight pole drill will be performed with only two steps.. Jan Johnson (n.d.), the 1972 Olympic Bronze Medalist believes that this drill is very crucial to an athletes development and is intended for the athlete to get into the habit of jumping into their takeoff and not rely on the pole to pull them up off of the ground. According to Johnson (n.d.) this drill should be performed early in the athlete’s development and is also a good warm up drill before an experienced athlete begins to pole vault.

Needs: A pole with a grass field to use, preferably a soccer or football field to ensure that the ground is reasonably level.

Description: Start this drill by establishing the grip height using the right hand and gripping from the highest point the athlete can grip when the pole is directly vertical in front of themselves. Once the grip height has been established, hold the pole with both hands bringing the right hand over the shoulder, left hand is out in front of the center of the body and the pole tip just above the ground. Because the pole drop hasn’t been mastered yet, the pole is starting from the over the shoulder position. Begin by stepping back with the right leg and rocking back on the left, run two steps starting with your right foot and jumping off of your left foot on the second step. Make sure that the right hand is fully extended pushing the pole overhead before jumping off of the left foot. The idea is to leave the ground off of your left foot slightly before the pole tip contacts the ground. Once off of the ground, make sure to keep pressing up with the right hand and keep your body behind the pole throughout the entire flight until you return back to the ground. Continue this drill down the grass field until you get to the other end of the field. Later after this two step grass vault has been mastered, the athlete will be asked to perform the same drill using four steps instead of two. This is to give the athlete more speed for
an ultimately higher grip height. The technical aspects of these drills are identical with one drill requiring two extra steps before the athlete leaves the ground.

**Common Errors:** Not jumping off of the ground before the pole tip touches the ground is the most common mistake of this drill and should be addressed immediately. Jumping slightly before the pole tip touches the ground is one of the most important habits to develop in the pole vault. Athletes who make this mistake either wait too long to try and jump or they don’t jump at all and see if their pole can pull them off of the ground. The athlete needs to be comfortable with the fact that they will likely feel weightless for a split second between them being in the air and the pole tip contacting the ground. The main focus for correcting this mistake is focusing the athlete’s attention to jumping as tall as they can over the pole before it touches the ground.

Not keeping the their body behind the pole is another big problem for this drill. Keeping the body behind the pole means that all of the energy that is created is behind the pole pushing it forward; if the body comes to the front of the pole it means that the athlete is no longer pushing the pole and the pole has either slowed it’s movement or stopped it’s movement completely. A common way that an athlete lets their body get to the front side of the pole is when they prematurely swing their left leg forward immediately after it leaves the ground, this creates a full body swing that eventually swings the athletes center of gravity past the front of the pole. The athlete must focus their attention to keeping their left leg pushed back behind them throughout their entire flight and know that it is also okay for their thigh to contact the backside of the pole as they come up to the apex of their jump with the pole near vertical. Note that the left leg will eventually need to swing in a complete pole vault however this drill will have no swinging.

Another common way an athlete lets their body travel to the front side of the pole is that they are not using their right arm properly throughout the flight and are either trying to pull their body straight up over their hand grip or trying to row their right arm out in front of themselves in
an effort to move the pole farther out in front of them. When either one of these actions are
performed the athlete’s chest will hollow and travel backwards away from the backside of the
pole while the athlete’s hips will dramatically swing out in front of the athletes body and past the
frontside of the pole. To fix this problem the athlete must focus their attention on pushing up
with the right arm throughout the entire flight and to let their chest open up and even contact the
pole if necessary.

It’s very important to pay attention to the athlete’s grip height. Yes it is important to
make sure that athletes aren’t gripping too high yet this drill encounters more athletes who are
gripping too low and have the pole move to fast before they are able to work on any technical
aspects of the pole vault. This problem is typically identified by an athlete moving the pole
quickly past vertical and still being on the front side of the pole towards the end of the flight. If
an athlete is holding too low, have them move up their handgrip by one hand width at a time until
they have reached an adequate grip height.
Grass Vaults
Drill: Grass Vaults
Equipment needed: 1 pole, grass field

Performance Cues
1. Right hand is high overhead before the pole tip contacts the grass
2. Body jumps up into the sand before the pole tip contacts the grass
3. Body stays behind the pole throughout the entire vault

Learning Tips
In order to stay behind the pole effectively you can have your trail leg and chest contact the pole while the pole is at its apex.

Common Errors and Their Corrections
1. Pulling down with the right arm and/or blocking out with the left arm
   (Relax the left arm and push up with the right arm)
2. Hips swing out in front of the pole once off the ground
   (Keep the chest forward and the trail leg behind the pole)
3. Leaning back at the takeoff
   (Jump up before you feel the pole hit the sand)

Criterion Task (partner checked)
Have a teammate observe you perform this drill making sure that you satisfy all 3 performance cues in order to qualify as a successful attempt.
Start off with this drill at 2 steps (1 left)
Perform this drill 10 times
Once you have accomplished at least 8 successful attempt out of ten you may progress to this drill with 4 steps (2 lefts).
Once you have accomplished at least 8 successful attempt out of ten you may progress to the next drill
If you complete 10 attempts without accomplishing at least 8 successful sets, have your coach monitor you attempt another 10 sets of this drill.
Once you have started three consecutive practices with this drill and have mastered the criterion in each of those three practices, you may begin the following practice with grass vaults from 4 steps (2 lefts) or the next drill in the progression depending on what skill was mastered.

Figure 6. Grass Vaults
Sand Vaults

The Sand vault is one of the drills most used by Brian Yokoyama (2009) the USA Track and Field women’s pole vault high performance/ development chair. According to Yokoyama (2009) the sand vault is a great drill to help the athlete establish their jump and plant very much like the grass vault however it enables the athlete to hold higher than they would on a grass vault and further challenges the athlete with their development.

Needs: In order to perform this drill, make sure that you have a proper long jump/triple jump sand pit to jump into. This straight pole drill will be conducted in the same fashion as the grass vault however the athlete should be able to hold slightly higher on the pole due to the softer landing in the sand.

Description: This first explanation will outline the two step sand vault. Start this drill by establishing the grip height using the highest grip height achieved while performing the two step grass vaults. Once the grip height has been established, hold the pole with both hands bringing the right hand over the shoulder, left hand is out in front of the center of the body and the pole tip just above the ground. Because the pole drop hasn’t been mastered yet, the pole is starting from this position. Establish a spot on the runway where you can run two steps and have the pole tip near the front edge of the sand pit. Begin by stepping back with the right leg and rocking back on the left, run two steps starting with your right foot and jumping off of your left foot on the second step. Make sure that the right hand is fully extended pushing the pole overhead before jumping off of the left foot. The idea is to leave the ground off of your left foot slightly before the pole tip contacts the sand. Once off of the ground, make sure to keep pressing up with the right hand and keep your body behind the pole throughout the entire flight until you return back to the ground.

Later after this two step sand vault has been mastered, the athlete will be asked to perform the same drill using four steps instead of two. This is to give the athlete more speed for
an ultimately higher grip height. The technical aspects of these drills are identical with one drill requiring two extra steps before the athlete leaves the ground.

**Common Errors:** Not jumping off of the ground before the pole tip touches the sand is the most common mistake of this drill and should be addressed immediately. Athletes who make this mistake either wait too long to try and jump or they don’t jump at all and see if their pole can pull them off of the ground. The athlete needs to be comfortable with the fact that they will likely feel weightless for a split second between them being in the air and the pole tip contacting the sand. The main focus for correcting this mistake is focusing the athlete’s attention to jumping as tall as they can over the pole before it touches the sand.

Not keeping the their body behind the pole is another big problem for this drill. Keeping the body behind the pole means that all of the energy that is created is behind the pole pushing it forward; if the body comes to the front of the pole it means that the athlete is no longer pushing the pole and the pole has either slowed it’s movement or stopped it’s movement completely. A common way that an athlete lets their body get to the front side of the pole is when they prematurely swing their left leg forward immediately after it leaves the ground, this creates a full body swing that eventually swings the athletes center of gravity past the front of the pole. The athlete must focus their attention to keeping their left leg pushed back behind them throughout their entire flight and know that it is also okay for their thigh to contact the backside of the pole as they come up to the apex of their jump with the pole near vertical. Note that the left leg will eventually need to swing in a complete pole vault however this drill will have no swinging.

Another common way an athlete lets their body travel to the front side of the pole is that they are not using their right arm properly throughout the flight and are either trying to pull their body straight up over their hand grip or trying to row their right arm out in front of themselves in an effort to move the pole farther out in front of them. When either one of these actions are
performed the athletes chest will hollow and travel backwards away from the backside of the pole while the athlete’s hips will dramatically swing out in front of the athletes body and past the frontside of the pole. To fix this problem the athlete must focus their attention on pushing up with the right arm throughout the entire flight and to let their chest open up and even contact the pole if necessary.

It’s very important to pay attention to the athlete’s grip height because this can also influence the athlete’s body position behind in front or behind the pole. Yes it is important to make sure that athletes aren’t gripping too high yet this drill encounters more athletes who are gripping too low and have the pole move to fast before they are able to work on any technical aspects of the pole vault. This problem is typically identified by an athlete moving the pole quickly past vertical and is somehow past the front side of the pole towards the end of the flight. If an athlete is holding too low, have them move up their handgrip up by one hand at a time until they have reached an adequate grip height.
<table>
<thead>
<tr>
<th>Sand Vaults</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Drill:</strong> 2 step Sand Vaults (1 left), 4 step Sand vaults (2 lefts)</td>
</tr>
<tr>
<td><strong>Equipment needed:</strong> 1 pole, Long jump runway and pit</td>
</tr>
</tbody>
</table>

**Performance Cues**
1. Right hand is high overhead before the pole tip contacts the sand
2. Body jumps up into the sand before the pole tip contacts the sand
3. Body stays behind the pole throughout the entire vault

**Learning Tips**
In order to stay behind the pole effectively you can have your trail leg and chest contact the pole while the pole is at its apex.

**Common Errors and Their Corrections**
1. Pulling down with the right arm and/or blocking out with the left arm
   (Relax the left arm and push up with the right arm)
2. Hips swing out in front of the pole once off the ground
   (Keep the chest forward and the trail leg behind the pole)
3. Leaning back at the takeoff
   (Jump up before you feel the pole hit the sand)

**Criterion Task (partner checked)**
Have a teammate observe you perform this drill making sure that you satisfy all 3 performance cues in order to qualify as a successful attempt.
- Start off with this drill at 2 steps (1 left)
- Perform this drill 10 times
- Once you have accomplished at least 8 successful attempt out of ten you may progress to this drill with 4 steps (2 lefts).
- Once you have accomplished at least 8 successful attempt out of ten you may progress to the next drill
- If you complete 10 attempts without accomplishing at least 8 successful sets, have your coach monitor you attempt another 10 sets of this drill.

Once you have started three consecutive practices with this drill and have mastered the criterion in each of those three practices, you may begin the following practice with sand vaults from 4 steps (2 lefts) or the next drill in the progression depending on what skill was mastered.

---

**Figure 7. Sand Vaults**
Mini Hurdle Runs

This drill is to establish proper running form and is to be performed without holding a pole. This drill isn’t specific to pole vaulting but rather running in general. This drill is mainly used with the sprints, hurdles, and jumping events of track and field and can also be used to general running mechanics for the majority of other sport speed development training.

Needs: Establish a set of 14 mini hurdles that are no higher than one foot from the ground. If mini hurdles aren’t at your school, you can merely place sticks down on the ground as a means of a visual perspective of where a hurdle should be. Place all 14 hurdles in a straight line down the track with the first three hurdles four feet from each other, next two hurdles are four and a half feet from each other, next three hurdles are five feet from each other, the following three hurdles are five and a half feet from each other, and the last three hurdles are six feet from each other. This spacing is a general spacing for boys running through the hurdles and may need to be altered depending on the speed of the athlete participating in the drill. For the girls’ hurdles, the spacing is four feet between the first three hurdles, four and a half feet between the next three hurdles, five feet spacing between the next four hurdles, and five and a half feet spacing for the last four hurdles. Again both of these spacing’s are just general hurdle spacing’s for a starting point. Hurdles may need to be closer if athletes aren’t fast enough for this drill or hurdles may need to be spread apart farther if athletes possesses a great deal of speed.

Description: To perform this drill the athlete will stand in front of the hurdles at few feet away, if needed the athlete may take a few steps with a running start into the hurdles and will run through the fourteen hurdles stepping over each hurdle. The main points to focus on in this drill is to stay tall and upright with the body and to push yourself to each hurdle cycling the heel of the back leg immediately up underneath the body a with the ankle dorsiflexed and bringing the front knee up high.
After the athlete has made it through the 14 hurdles they should continue running for 10-20 meters keeping the same correct running mechanics they used going over the hurdles.

**Common Errors:** The most common mistake of this drill is that athletes are too concerned with getting their feet over the hurdles and they don’t push their bodies over each hurdle, they merely try to reach their legs out in front of themselves in an effort for their foot to get past the hurdle. This causes the athlete to lean back compromising their upright body position as well as sink their hips low as they run. It’s important that the athlete focus on pushing their bodies forward through each hurdle by putting force through the ground as their foot comes in between each hurdle.

Looking down at the hurdles is another common mistake especially with athletes who are new to the drill. Looking down rounds the spine and compromises the upright and tall running mechanics that are desired in the pole vault. The athlete should focus on trusting that the hurdles are underneath them and stay tall while pulling their heel underneath themselves with high knees as the leg comes to the front side of the body, this ensures that the athlete will cycle their legs over each hurdle provided that they are pushing themselves down the track.
### Mini Hurdle Runs

**Drill:** Mini Hurdle Runs  
**Equipment needed:** 30-40 meters of grass or track and 14 mini hurdles

<table>
<thead>
<tr>
<th>Performance Cues</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Push your body over and past each hurdle</td>
<td></td>
</tr>
<tr>
<td>2. Pull your heel directly underneath yourself once your foot leaves the ground</td>
<td></td>
</tr>
<tr>
<td>3. Stay tall throughout the run</td>
<td></td>
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</table>

**Learning Tips**  
- Bring a small run up into the hurdles before going over them.  
- This drill is easier when the proper spacing between each hurdle is used. Use this diagram below to show the average spacing for boys and girls. ($/ = \text{mini hurdle}$)

- **Boys’ spacing:**  
  / 4’ 4’ 6”/4’ 6”/5’ 5’ 6”/5’ 5’ 6”/5’ 6”/6’ 6”/6’

- **Girls’ spacing:**  
  / 4’ 4’ 6”/4’ 6”/5’ 5’ 6”/5’ 5’ 6”/5’ 6”/5’ 6”/5’ 6”

**Common Errors and their Corrections**  
1. Leaning back while running  
   (Try to stay tall and move a little faster though the hurdles)  
2. Reaching out with the front foot to get over the next hurdle  
   (Pick knees up high over the hurdles and push our entire body in between the next two hurdles)

**Criterion Task (partner checked)**  
- Have a teammate observe you perform this drill making sure that you satisfy all 3 performance cues in order to qualify as a successful attempt.  
- Running through all 14 hurdles equals one attempt. Perform a total of 5 attempts  
- Once you have accomplished at least 4 successful attempts out of your 5, you may then progress to the next drill.  
- If you complete 5 attempts without accomplishing at least 4 successful attempts, have your coach monitor you attempt another 5 attempts of this drill.  
- Once you have started three consecutive practices with this drill and have mastered the criterion in each of those three practices, you may begin the following practice with the next drill in the progression.

**Figure 8. Mini Hurdle Runs**
Pole Marching

This drill is designed to help the athlete feel comfortable moving while holding the pole properly.

Needs: The athlete needs to have a pole and be on some part of the track straight with 20-30 meters of track in front of them.

Description: To begin this drill, address your pole grip and hold the pole at the high carry position with the right hand next to the right hip and the left hand in front of the center of the chest, left arm supporting underneath the pole. The athlete will step back with the right foot and rock back on the left. The athlete will begin to march down the track stepping with their right foot first and counting every left foot that contacts the ground, marching for a total of seven lefts, or 14 steps. Athlete is marching with tall upright posture marching with high knees and ankles dorsiflexed. For this drill the pole carry stays high the entire time.

Common Errors: A common mistake for this drill is the athlete lets their shoulders rotate as they are marching. This has the potential for slowing the athlete down later when they begin running. It’s important that the athlete focus on keeping their entire body square to where they are marching towards. There aren’t many other mistakes to be made with this drill given its overall simplicity.

Another problem is athletes aren’t marching as upright and tall as they could be. Make sure the athlete’s focus is on being tall because they will need to be running tall throughout the entire run for the pole vault.
### Pole Marching

Drill: Pole Marching  
Equipment needed: 20-30 meters of track and a pole

#### Performance Cues
1. Proper high carry (see pole grip sheet if needing further clarification)  
2. Pull your heel directly underneath yourself once your foot leaves the ground  
3. Stay tall throughout the run with high knees

#### Learning Tips
Keep the pole tip high throughout the entire drill, you will not be dropping the pole yet so just focus on marching with good posture as you’re carrying the pole.

The pole can come slightly across your body as you’re marching.

#### Common Errors and Their Corrections
1. Marching with low body posture.  
   (Push hips up high underneath your body and keep right hand next to the right hip)  
2. Letting shoulders rotate away as marching.  
   (Pick knees up high over the hurdles and push our entire body in between the next two hurdles)

#### Criterion Task (partner checked)
Have a teammate observe you perform this drill making sure that you satisfy all 3 performance cues in order to qualify as a successful attempt.  
Marching with 7 lefts equals one attempt. Perform a total of 10 attempts  
Once you have accomplished at least 8 successful attempts out of your 10, you may then progress to the next drill.  
If you complete 10 attempts without accomplishing at least 8 successful attempts, have your coach monitor you complete another 10 attempts of this drill.  
Once you have started three consecutive practices with this drill and have mastered the criterion in each of those three practices, you may begin the following practice with the next drill in the progression.

---

**Figure 9. Pole Marching**
**Pole Runs with No Drop**

This drill is designed to help the athlete feel comfortable running while holding the pole properly however the athlete will not drop the pole yet. This is precisely like pole marching however the athlete will be moving faster.

**Needs:** The athlete needs to have a pole and be on some part of the track straight with 20-30 meters of track in front of them.

**Description:** When first starting this drill, the athlete will perform the running at half of their maximum speed and once they’ve mastered the drill at half speed, they can then go to full speed. To begin this drill, address your pole grip and hold the pole at the high carry position with the right hand next to the right hip and the left hand in front of the center of the chest, left arm supporting underneath the pole. When first starting this drill, the athlete will perform the running at half of their maximum speed and once they’ve mastered the drill at half speed, they can then go to full speed. The athlete will step back with the right foot and rock back on the left. The athlete will begin to run down the track stepping with their right foot first and counting every left foot that contacts the ground, running for a total of seven lefts, or 14 steps.

When counting the steps it is preferable to count downwards in order for there to be uniformity in the numbers as the athlete comes into the last few lefts of their run. Whether the athlete is on their seven left approach or their four left approach, the count at the end of the run will always contain the same descending numbers and not differing increasing numbers. This should help the athlete in their transfer from one approach to another with little difficulty. Additionally it’s advised to not count the last left and tell yourself “jump” on the last left, this should create a greater effort at the takeoff given the manner of the self talk. Therefore for this seven left drill the athlete would count every time their left foot contacted the ground as they
were running “six, five, four, three, two, one, jump” with six being the first left taken in the run and jump being the takeoff foot.

During the run it’s important that the athlete drive down the track with their first two lefts and then begin to transition from those two driving steps into an accelerated run. Terry VanLaningham from Sacramento State says that these two driving lefts help build consistency in the run and overall maximum speed once at the takeoff. “It doesn’t matter how fast you are at the beginning of the run, but it really matters how fast they’re running at the end of the run/beginning of the takeoff” T.V. (personal communication, October, 2004). If an athlete covers more ground in the first initial steps of their run they will have something to build the rest of their run off of as they get the feet touching down quicker. The athlete is running with tall upright posture running with high knees and ankles dorsiflexed.

**Common Errors:** A common mistake for this drill is the athlete lets their shoulders rotate as they are running. This has the potential for slowing the athlete down later when they begin running. It’s important that the athlete focus on keeping their entire body square to where they are marching towards. There aren’t many other mistakes to be made with this drill given its overall simplicity.

Another problem is athletes aren’t marching as upright and tall as they could be. Make sure the athlete’s focus is on being tall because they will need to be running tall throughout the entire run for the pole vault.
### Pole runs (no pole drop)

Drill: Half Speed Pole Runs (no drop), Full Speed Pole Runs (no drop)

Equipment needed: 30-40 meters of track and a pole

<table>
<thead>
<tr>
<th>Performance Cues</th>
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<tbody>
<tr>
<td>1. Proper high carry (see pole grip sheet if needing further clarification)</td>
</tr>
<tr>
<td>2. Pull your heel directly underneath yourself once your foot leaves the ground</td>
</tr>
<tr>
<td>3. Stay tall throughout the run with high knees</td>
</tr>
</tbody>
</table>

### Learning Tips

- Keep the pole tip high throughout the entire run, you will not be dropping the pole yet so just focus on marching with good posture as you’re carrying the pole.
- The pole can come slightly across your body as you’re marching.
- Remember this is the same positioning as the pole marches, you are just moving faster.

<table>
<thead>
<tr>
<th>Common Errors and Their Corrections</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Running with low body posture.</td>
</tr>
<tr>
<td>(Push hips up high underneath your body and keep right hand next to the right hip)</td>
</tr>
<tr>
<td>2. Letting shoulders rotate away as marching.</td>
</tr>
<tr>
<td>(Keep the right hand next the right hip with the left hand in front of your chest)</td>
</tr>
</tbody>
</table>

### Criterion Task (partner checked)

Have a teammate observe you perform this drill making sure that you satisfy all 3 performance cues in order to qualify as a successful attempt.

7 left run equals one attempt, start out running at half speed. Perform a total of 10 attempts. Once you have accomplished at least 8 successful attempts out of your 10, you may then progress to this drill at full speed.

Once you have accomplished at least 8 successful attempts out of your 10, you may then progress to the next drill.

If you complete 10 attempts without accomplishing at least 8 successful attempts, have your coach monitor you complete another 10 attempts of this drill.

Once you have started three consecutive practices with this drill and have mastered the criterion in each of those three practices, you may begin the following practice with performing this drill at full speed or the next drill in the progression depending on the previous skill mastered.

---

**Figure 10. Pole Runs (no drop)**
20 in 20 drill

This drill is designed by Alan Launder (2008), a world famous pole vault coach and is intended to allow the athlete to quicken up their cadence as they approach the takeoff and avoid the occurrence of them reaching out with their feet at the takeoff placing them under or too close to the pit past their desired takeoff point.

**Needs:** In order to perform this drill correctly the athlete will use a piece of the track with two large pieces of tape on the ground to mark the boundaries of a 20 meter section going down the track.

**Description:** The athlete will address the first piece of tape of the 20 meter section and address their pole grip holding the pole at the high carry position with the right hand next to the right hip and the left hand in front of the center of the chest, left arm supporting underneath the pole. The athlete will step back with the right foot and rock back on the left. The athlete will begin to run down the track stepping with their right foot first and counting every left foot that contacts the ground, running for a total of ten lefts, or 20 steps. The idea behind this drill is to get all 20 steps in the 20 meter section while still executing tall upright posture, good running mechanics, and proper pole carry; the pole carry will stay high throughout this entire drill.

**Common Errors:** Not getting all 20 steps in the 20 meters is the most common drill thereby forcing the athlete to focus on cycling their legs faster. The only other problem that could be occurring in this drill is the athlete will get their 20 steps in 20 meters however they will sacrifice either their tall posture, running mechanics, and/or their pole carry in order to do to get all 20 steps in 20 meters. Its important that the athlete know that this drill isn’t deemed successful until they can achieve 20 steps in 20 meters with proper technique.
**20 in 20**

**Drill:** 20 in 20  
**Equipment needed:** 30 meters of track, a measuring tape, and a pole

<table>
<thead>
<tr>
<th><strong>Performance Cues</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Keep pole up in the high carry position (see pole carry sheet for further clarification)</td>
</tr>
<tr>
<td>2. Get 20 steps (10 lefts) within 20 meters</td>
</tr>
<tr>
<td>3. Run with tall body posture and high knees pumping</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Learning Tips</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>- Don’t be too focused on achieving the 20 steps (10 lefts) in the 20 meters, you also have to focus on your technique. If you execute poor technique but still get 20 steps in 20 meters, the drill is ineffective.</td>
</tr>
<tr>
<td>- You won’t be traveling as great of a distance per stride compared to a normal run, this drill is merely designed for you to feel comfortable increasing your cadence.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Common Errors and Their Corrections</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Not getting all 20 steps (10 lefts) in the 20 meters</td>
</tr>
<tr>
<td>(Pump your knees faster)</td>
</tr>
<tr>
<td>2. Getting the 20 steps within 20 meters but sacrificing either your pole carry or your running mechanics in order to do so.</td>
</tr>
<tr>
<td>(Make sure to execute proper carry and run technique. At first, it’s better to not get 20 steps in 20 meters with good technique than to achieve 20 steps in 20 meters with poor technique)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Criterion Task (partner checked)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Have a teammate observe you perform this drill making sure that you satisfy all 3 performance cues in order to qualify as a successful attempt.</td>
</tr>
<tr>
<td>Perform 20 in 20 5 times</td>
</tr>
<tr>
<td>Once you have accomplished at least 4 successful attempts out of your 5, you may then progress to the next drill.</td>
</tr>
<tr>
<td>If you complete 5 attempts without accomplishing at least 4 successful attempts, have your coach monitor you attempt another 5 attempts of this drill.</td>
</tr>
<tr>
<td>Once you have started three consecutive practices with this drill and have mastered the criterion in each of those three practices, you may begin the following practice with the next drill in the progression.</td>
</tr>
</tbody>
</table>

*Figure 11. 20 in 20*
**One, Two, Three...Plant, Two, Three Drill**

This drill is also designed by Alan Launder (2008), to give the athlete a feel of what the pole drop should feel like in the last six steps or three lefts of the run just before they takeoff.

There are very similar drills made by other coaches that go over the same checkpoints for the drill however the verbal cues used for this version of the drill keep the drill simplified and easy for the athletes to understand.

**Needs:** The athlete will need a pole and should perform this drill on a track straight away with roughly 20 meters of track for them to use in front of them.

The athlete will start out holding the pole high and stepping back with the right foot and start marching forward. The athlete will count every step they make and in the first three steps (“one, two, three”) the athlete will have lowered the tip of the pole to slightly above the forehead by the time the third step hits the ground. In the second three steps (“plant, two, three”) the athlete will begin to lower the pole tip toward the ground while moving both hands up overhead. Throughout this entire drill it’s important that the athlete is dropping the pole in a continuous fluid motion. By the time the last step is taken the pole tip should just be contacting the ground and the athlete should have their arms up high with tall body posture, their right arm overhead and right knee high.

This drill is to be done at first by just marching to ensure that it is slow enough for the athlete to understand the proper timing. After the athlete masters this drill marching they will then perform the drill at half speed performing the same drill with just a small jump off of the ground at the end to simulate a takeoff. Once half speed is mastered, the athlete will perform the drill at full speed.

**Common Errors:** This is drill can give some confusion to beginners so make sure that their problems are being addressed immediately. The biggest problem for this drill is that athletes
aren’t keeping their pole drop in time with their stride cadence. This is typically the result of the athlete dropping the pole in abrupt and robotic like movements that aren’t fluid. The athlete must focus on keeping the entire pole drop one continuous fluid movement until the pole tip hits the ground. If the athlete is keeping the pole drop fluid and they are still late on their checkpoints, they either need to drop the pole sooner or merely drop the pole faster, however the athlete still needs to keep the pole drop fluid.

A very big mistake that athletes tend to make is that as soon as the athlete begins to raise their arms up on the “plant, two, three” they move their right hand behind their body and circle it back around their torso and then bring the pole forward. This creates a conflicting movement because all of the energy that the athlete is creating is moving forward yet the pole is being moved backwards. This problem can have many negative effects including dropping the athlete’s posture, and/or lengthening out the athlete’s stride too much, and worst of all slow them down just before the takeoff. The athlete’s focus needs to be to roll the right hand slightly forward when the arms begin to rise and then to raise both hands up overhead, never let the hands come behind the body.
Drill: 1,2,3…Plant,2,3
Equipment needed: 20-30 meters of track and a pole

<table>
<thead>
<tr>
<th>Performance Cues</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Pole is moving fluidly in one constant motion throughout the entire drill</td>
</tr>
<tr>
<td>2. Pole tip is slightly above eye level by the first “3” and then on the ground with the arms overhead by the second “3”</td>
</tr>
<tr>
<td>3. Stay tall throughout the drill with high knees</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Learning Tips</th>
</tr>
</thead>
<tbody>
<tr>
<td>If done properly the pole should feel much lighter during this drop compared to just holding the pole in the high carry position.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Common Errors and Their Corrections</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Not keeping the pole drop in timing with stride cadence. Typically too late. (perform the drill at a slower speed until proper timing can be established)</td>
</tr>
<tr>
<td>2. Letting shoulders rotate away as the pole drops. Also known as roundhousing (roll the right hand slightly in front of the body as the right hand begins to rise then raise both hands directly overhead)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Criterion Task (partner checked)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have a teammate observe you perform this drill making sure that you satisfy all 3 performance cues in order to qualify as a successful attempt.</td>
</tr>
<tr>
<td>Start this drill marching. Perform a total of 5 attempts</td>
</tr>
<tr>
<td>Once you have accomplished all 5 successful attempts marching, you may then progress to performing this drill at half speed.</td>
</tr>
<tr>
<td>Once you have accomplished all 5 successful attempts at half speed, you may then progress to performing this drill at full speed.</td>
</tr>
<tr>
<td>Once you have accomplished all 5 successful attempts at half speed, you may then progress to the next drill in this progression.</td>
</tr>
<tr>
<td>If you complete any of these 5 attempts without accomplishing all 5 attempts, have your coach monitor you complete another 5 attempts of this drill.</td>
</tr>
<tr>
<td>Once you have started three consecutive practices with this drill and have mastered the criterion in each of those three practices, you may begin the following practice with this drill at half speed, full speed or with the next drill in the progression depending on the previous skill mastered.</td>
</tr>
</tbody>
</table>

*Figure 12. 1,2,3…Plant, 2,3*
**Pole Runs with Pole Drop**

This drill is designed to help the athlete feel comfortable running with a pole and holding/dropping the pole properly.

**Needs:** The athlete needs to be on some part of the track straight with 30-40 meters of track in front of them.

**Description:** When first starting this drill, the athlete will perform the running at half of their maximum speed and once they’ve mastered the drill at half speed, they can then go to full speed. To begin this drill, address your pole grip and hold the pole at the high carry position with the right hand next to the right hip and the left hand in front of the center of the chest, left arm supporting underneath the pole. When first starting this drill, the athlete will perform the running at half of their maximum speed and once they’ve mastered the drill at half speed, they can then go to full speed. The athlete will step back with the right foot and rock back on the left. The athlete will begin to run down the track stepping with their right foot first and counting every left foot that contacts the ground, running for a total of seven lefts, or 14 steps.

When counting the steps it is preferable to count downwards in order for there to be uniformity in the numbers as the athlete comes into the last few lefts of their run. Whether the athlete is on their seven left approach or their four left approach, the count at the end of the run will always contain the same descending numbers and not differing increasing numbers. This should help the athlete in their transfer from one approach to another with little difficulty. Additionally it’s advised to not count the last left and tell yourself “jump” on the last left, this should create a greater effort at the takeoff given the manner of the self talk. Therefore for this seven left drill the athlete would count every time their left foot contacted the ground as they were running “six, five, four, three, two, one, jump” with six being the first left taken in the run and jump being the takeoff foot.
During the run it’s important that the athlete drive down the track with their first two lefts and then begin to transition from those two driving steps into an accelerated run. These two driving lefts help build consistency in the run and overall maximum speed once at the takeoff. The athlete is running with tall upright posture running with high knees and ankles dorsiflexed.

As the athlete is nearing the end of their run, they need to be dropping the pole to get ready for the takeoff. From the beginning of the run the pole tip should be carried slightly past vertical to keep the athlete feeling comfortable holding the pole. Throughout the run the athlete should be slightly dropping to pole to roughly a 45 degree angle once they hit their fourth to last step (otherwise known a “three” using the recommended cadence count). After they have reached this point the remainder of the run and pole drop is precisely like the one, two, three… plant, two, three drill. The pole tip should be slightly overhead just after “two”, and both hands should be extended with the right hand overhead and the body jumping up into the right hand by “jump”.

**Common Errors:** A common mistake for this drill is the athlete lets their shoulders rotate as they are marching. This has the potential for slowing the athlete down later when they begin running. It’s important that the athlete focus on keeping their entire body square to where they are running towards. There aren’t many other mistakes to be made with this drill given its overall simplicity.

The biggest problem for this drill is that athletes aren’t keeping their pole drop in time with their stride cadence. This is typically the result of the athlete dropping the pole in abrupt and robotic like movements that aren’t fluid. The athlete must focus on keeping the entire pole drop one continuous fluid movement until the pole tip hits the ground. If the athlete is keeping the pole drop fluid and they are still late on their checkpoints, they either need to drop the pole sooner or merely drop the pole faster, however the athlete still needs to keep the pole drop fluid.
Another big problem for this drill is that athlete will slow down towards the end of their run in an effort to give themselves more time to drop the pole properly. This is extremely dangerous due to the fact that it is the athlete’s speed that helps get them into the landing pit. If this becomes a habit with this drill, it will be hard to break once the athlete attempts a real pole vault. The priority given to the athlete trying to fix this problem should be to have them bring as much controllable speed as they possibly can off the ground with them during their takeoff.

Tall running posture can oftentimes be overlooked by the athlete if they are only focusing on their pole drop. The athlete must divert their attention to good running mechanics, pulling the heel up underneath the body, ankle dorsiflexed once the foot leaves the ground and knees brought up high.
# Pole Runs with Pole Drop

**Drill:** 5 left pole runs (half speed), 5 left pole runs (full speed), 7 left pole runs (half speed), 7 left pole runs (full speed)

**Equipment needed:** 40 meters track, measuring tape, and a pole

## Performance Cues
1. Proper high carry and pole drop (see pole grip and 1,2,3… plant, 2,3 sheets if needing further clarification)
2. Stay tall throughout the run
3. Drive out the first two lefts and build your cadence an speed as you near the end of your run.

## Learning Tips
- You won’t be as fast on your 5 left runs as you will be on your 7 left runs. Keep your run consistent and make sure that your 5 left run is just like the first five lefts of your seven left run. The same goes for your seven left run, make sure that your first five lefts are the same as your five left run and then continue your speed through your final two lefts.
- The pole drop will begin to drop around the fourth or fifth to last step depending on your speed after that the last three left should be exactly like the 1,2,3…plant, 2,3 drill.
- Measure out your approach and record your distance to see if your being consistent, also establish a checkmark within your approach to verify your consistency.

## Common Errors and Their Corrections
1. Not keeping pole drop in time with the run. Typically is too late.  
   (Remember the 1,2,3…plant,2,3 drill)
2. Slowing down at the end of the run to keep in time with pole drop.  
   (Keep your speed going off of the takeoff)
3. Running with low body posture  
   (Keep hips up and underneath yourself with your right hand on the right hip)

## Criterion Task (partner checked)
Have a teammate observe you perform this drill making sure that you satisfy all 3 performance cues in order to qualify as a successful attempt.
Perform this drill 5 times
Once you have accomplished at least 4 successful attempts out of your 5, you may then progress to the next drill.
If you complete 5 attempts without accomplishing at least 4 successful attempts, have your coach monitor you attempt another 5 attempts of this drill.
Once you have started three consecutive practices with this drill and have mastered the criterion in each of those three practices, you may begin the following practice with the next drill in the progression.

---

**Figure 13. Pole Runs with Pole Drop**
**Pop up**

**Needs:** Make sure that you have a legal sized pole vault pit to jump into and a measuring tape along side the runway with the zero at the back edge of the box. This straight pole drill will be conducted in the same fashion as the grass and sand vault however the athlete should be able to hold slightly higher on the pole due to the extra left allowing for more speed at the takeoff.

**Description:** Start this drill by establishing the grip height using the highest grip height achieved while performing the four step sand vaults. Once the grip height has been established, hold the pole up at a 45 degree angle with the right hand on the hip and the left hand supporting underneath the pole.

Establish a spot on the runway where you can run three lefts and have the pole tip near the back edge of the box this should be around 30-40 feet. Begin by stepping back with the right leg and rocking back on the left, run three lefts starting with your right foot and jumping off of the third left. During the run make sure to drop the pole properly like in the one, two, three… plant, two, three drill making sure that the right hand is fully extended pushing the pole overhead before jumping off of the left foot. The idea is to leave the ground off of your left foot slightly before the pole tip contacts the box. Once off of the ground, make sure to keep pressing up with the right hand and keep your body behind the pole throughout the entire flight until you return back to the ground.

**Common Errors:** Not jumping off of the ground before the pole tip touches the back of the box is the most common mistake of this drill and should be addressed immediately. Athletes who make this mistake either wait too long to try to jump or they don’t jump at all and see if their pole can pull them off of the ground. The athlete needs to be comfortable with the fact that they will likely feel weightless for a split second between them being in the air and the pole tip contacting the back of the box. The main focus for correcting this mistake is focusing the athlete’s attention
to jumping as tall as they can over the pole before it touches the back of the box. This cue of jumping before the pole contacts the back of the box is used by Kris Mack from the University of Cincinnati who believes that this enables the athlete to get comfortable performing a free takeoff, but also is useful due to the drills specificity of its environment with its use of the runway and pole vault pit that will help the athlete transition from the track performing running/pole dropping drills to performing full pole vaults (personal communication, July, 2005).

Not keeping the body behind the pole is another big problem for this drill. Keeping the body behind the pole ensures that all of the energy that is created is behind the pole pushing it forward; if the body comes to the front of the pole it means that the athlete is no longer pushing the pole and the pole has either slowed its movement or stopped its movement completely. A common way that an athlete lets their body get to the front side of the pole is when they prematurely swing their left leg forward immediately after it leaves the ground, this creates a full body swing that eventually swings the athletes center of gravity past the front of the pole. The athlete must focus their attention to keeping their left leg pushed back behind them throughout their entire flight and know that it is also okay for their thigh to contact the backside of the pole as they come up to the apex of their jump with the pole near vertical. Note that the left leg will eventually need to swing in a complete pole vault however this drill will have no swinging.

Another common way an athlete lets their body travel to the front side of the pole is that they are not using their right arm properly throughout the flight and are either trying to pull their body straight up over their hand grip or trying to row their right arm out in front of themselves in an effort to move the pole farther out in front of them. When either one of these actions are performed the athlete’s chest will hollow and travel backwards away from the backside of the pole while the athlete’s hips will dramatically swing out in front of the athletes body and past the front side of the pole. To fix this problem the athlete must focus their attention on pushing up
with the right arm throughout the entire flight and to let their chest open up and even contact the pole if necessary.

It’s very important to pay attention to the athlete’s grip height because this can also influence the athlete’s body position behind in front or behind the pole. Yes it is important to make sure that athletes aren’t gripping too high yet this drill encounters more athletes who are gripping too low and have the pole move to fast before they are able to work on any technical aspects of the pole vault. This problem is typically identified by an athlete moving the pole quickly past vertical and is somehow past the front side of the pole towards the end of the flight. If an athlete is holding too low, have them move up their hand grip up by one hand width at a time until they have reached an adequate grip height.
**Pop Ups**

**Drill: Pop ups**

Equipment needed: 20 meters of pole vault runway, pole vault pit, measuring tape, and a pole

<table>
<thead>
<tr>
<th>Performance Cues</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Drop pole like 1,2,3… plant 2,3, (See 1,2,3…plant, 2,3 for clarification if needed)</td>
<td></td>
</tr>
<tr>
<td>2. Jump up into the pit with right hand overhead before the pole tip hits the back of the box.</td>
<td></td>
</tr>
<tr>
<td>3. Stay behind the pole throughout the entire flight</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Learning Tips</th>
</tr>
</thead>
<tbody>
<tr>
<td>Make sure that you measure out your 3 left approach for this drill.</td>
</tr>
<tr>
<td>This drill should be performed just like the sand vaults and grass vaults however you’ll likely be holding higher.</td>
</tr>
<tr>
<td>Your body can tap the pole during the vault, just make sure to stay behind the pole.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Common Errors and Their Corrections</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Pulling down with the right arm and/or blocking out with the left arm</td>
<td></td>
</tr>
<tr>
<td>(Relax the left arm and push up with the right arm)</td>
<td></td>
</tr>
<tr>
<td>2. Hips swing out in front of the pole once off the ground</td>
<td></td>
</tr>
<tr>
<td>(Keep the chest forward and the trail leg behind the pole)</td>
<td></td>
</tr>
<tr>
<td>3. Leaning back at the takeoff</td>
<td></td>
</tr>
<tr>
<td>(Jump up before you feel the pole hit the box)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Criterion Task (partner checked)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have a teammate observe you perform this drill making sure that you satisfy all 3 performance cues in order to qualify as a successful attempt.</td>
</tr>
<tr>
<td>Perform this drill 10 times</td>
</tr>
<tr>
<td>Once you have accomplished at least 8 successful attempts out of your 10, you may then progress to the next drill.</td>
</tr>
<tr>
<td>If you complete 10 attempts without accomplishing at least 8 successful attempts, have your coach monitor you attempt another 10 attempts of this drill.</td>
</tr>
<tr>
<td>Once you have started three consecutive practices with this drill and have mastered the criterion in each of those three practices, you may begin the following practice with the next drill in the progression.</td>
</tr>
</tbody>
</table>

Figure 14. Pop up
**Slide Box**

This drill is designed to help the athlete feel comfortable running with a pole and holding/dropping the pole properly while giving them some visual perspective of dropping the pole into a box and jumping into a takeoff. Scott Slover, former professional pole vaulter and former UC Berkeley coach, feels that the slidebox is not only a great drill and tool for anybody who is learning the proper run, pole drop, and takeoff mechanics; but it's also a great drill for helping any athletes who have difficulty hitting their arms up high when they come into their takeoff due to the slight pressure put through the pole and the arms at the point of takeoff. (personal communication, June, 2004).

**Needs:** The athlete needs to be on some part of the track straight with 30-40 meters of track in front of them; there should be a slide box facing the athlete with a measurement tape running alongside the lane that the slide box is in with the zero point starting at the back edge of the slide box. The beginning version of this drill that will be described will be of a four left approach. As the athlete masters the four left approach, they will increase the approach length by one left at a time until they have reached a seven left approach using a slide box.

To begin this drill, the athlete must have an accurate measurement of where they should start their approach from; in order to obtain this mark have the athlete perform a pole run alongside a measuring tape starting at zero. A coach or a teammate needs to count the athletes desired lefts and make sure that they find the point on the track where the athlete’s final left touches the ground, in the case for this beginning level of this drill it would be four lefts. When the athlete has received this mark all that they need to do is add this distance to the distance that athlete will be at during the takeoff and then they will have the proper distance of their approach. To get the proper distance from the takeoff, the athlete must stand with their pole tip in the slide box with their arms overhead and have their right hand directly over their head, once this is done
look to see where the athletes toes measure on the measuring tape to discover the athletes proper takeoff mark. Remember that the takeoff mark can change if the athlete drastically varies their grip height, therefore make sure that the proper takeoff mark is always known when the athlete raises their grip up. Additionally it’s very important that this approach distance gets written down once it has been established. If the athlete is forced to continuously try and find their mark, they will be losing a great deal of practice time and likely fall behind on their potential development.

While the athlete is performing a four left approach for their slide box drill, they will not need a check mark. However once the athlete moves to any approach larger than a four left approach, they will need to establish a check mark to ensure that their run is being consistent. To establish a checkmark, place a piece of tape on the side of the runway on the spot where the athlete’s third to last left foot touches down on the track. Make sure that a new check mark is established for each approach run, the check for a five left approach will be different from a six left approach given the different amount of speed carried between the two approaches.

**Description:** Once the athlete has their approach marked and ready to go they address their pole grip and hold the pole at the high carry position with the right hand next to the right hip and the left hand in front of the center of the chest, left arm supporting underneath the pole. When first starting this drill, the athlete will perform the running at half of their maximum speed. Once they’ve mastered the drill at half speed, they can then go to full speed. The athlete will step back with the right foot and rock back on the left. The athlete will begin to run down the track stepping with their right foot first and counting every left foot that contacts the ground, running for a total of four lefts.

During the run it’s important that the athlete drive down the track with their first two lefts and then begin to transition from those two driving steps into an accelerated run. These two driving lefts help build consistency in the run and overall maximum speed once at the takeoff.
The athlete is running with tall upright posture running with high knees and ankles dorsiflexed. As the athlete is nearing the end of their run, they need to be dropping the pole to get ready for the takeoff. From the beginning of the run the pole tip should be carried slightly past vertical to keep the athlete feeling comfortable holding the pole. Because the beginning level of this drill is for a four left approach the athlete will start their pole carry with their pole at a 45 degree angle. After this point the remainder of the run and pole drop is precisely like the one, two, three… plant, two, three drill. The pole tip should be slightly overhead just after “two”, and both hands should be extended with the right hand overhead and the body jumping up into the right hand by “jump”. When the athlete goes to put the pole tip down they need to make sure that it makes it into the box and that they have both arms pushing up as they jump up into their takeoff. If done correctly the slide box should move out in front of the athlete as they takeoff the ground.

**Common Errors:** Not having the arms pushing up is a problem for this drill, arms are either bent overhead or reached of in front of the athletes body. The athlete must realize that both arms must be pushing up before the pole tip hits the slide box in order to effectively push the slide box.

A common mistake is the athlete let’s their shoulders rotate as they’re run, this slows the athlete down greatly during the run. It’s important that the athlete focus on keeping their entire body square to the slidebox. Oftentimes the athlete’s low right hand as they’re carrying the pole can contribute to this problem. Have the athlete carry the pole right next to their right hip and they should be able to keep their shoulders more square to where they’re running.

The biggest problem for this drill is that athletes aren’t keeping their pole drop in time with their stride cadence. This is typically the result of the athlete dropping the pole in abrupt and robotic like movements that aren’t fluid. The athlete must focus on keeping the entire pole drop one continuous fluid movement until the pole tip hits the ground. If the athlete is keeping the pole drop fluid and they are still late on their checkpoints, they either need to drop the pole sooner
or merely drop the pole faster, however the athlete still needs to continue keeping the pole drop fluid.

Another big problem for this drill is that athlete will slow down towards the end of their run in an effort to give themselves more time to drop the pole properly. This is extremely dangerous due to the fact that it is the athlete’s speed that helps get them into the landing pit. If this becomes a habit with this drill, it will be hard to break once the athlete attempts a real pole vault. The priority given to the athlete trying to fix this problem should be to have them bring as much controllable speed as they possibly can off the ground during their takeoff.

Tall running posture can oftentimes be overlooked by the athlete if they are only focusing on their pole drop and/or slide box. The athlete must divert their attention to good running mechanics, pulling the heel up underneath the body, and ankles dorsiflexed once foot leave the ground and knees brought up high.
**Slide Box**

**Drill:** 4 left slide box, 5 left slide box, 6 left slide box, 7 left slide box  
**Equipment needed:** 40 meters track, slide box, measuring tape, and a pole.

<table>
<thead>
<tr>
<th>Performance Cues</th>
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<tbody>
<tr>
<td>1. Proper pole run (see pole run sheet for clarification if needed)</td>
</tr>
<tr>
<td>2. Jump up into slide box with hands overhead before pole tip touches the back of the slide box</td>
</tr>
<tr>
<td>3. Push the slide box down the track while keeping upright posture through the air.</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Learning Tips</th>
</tr>
</thead>
<tbody>
<tr>
<td>- You won’t be as fast on your 5 left runs as you will be on your 7 left runs. Keep your run consistent and make sure that your 5 left run is just like the first five lefts of your seven left run. The same goes for your seven left run, make sure that your first five lefts are the same as your five left run and then continue your speed through your final two lefts.</td>
</tr>
<tr>
<td>- The pole drop will begin to drop around the fourth or fifth to last step depending on your speed after that the last three left should be exactly like the 1, 2, 3…plant, 2, 3 drill.</td>
</tr>
<tr>
<td>- Measure out your approach and record your distance to see if your being consistent, also establish a checkmark within your approach for your 5 left, 6 left and 7 left approaches to verify your consistency.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Common Errors and Their Corrections</th>
</tr>
</thead>
</table>
| 1. Not keeping pole drop in time with the run. Typically is too late.  
  (Remember the 1, 2, 3…plant, 2, 3 drill) |
| 2. Slowing down at the end of the run to keep in time with pole drop.  
  (Keep your speed going off of the takeoff) |
| 3. Running with low body posture  
  (Keep hips up and underneath yourself with your right hand on the right hip) |

<table>
<thead>
<tr>
<th>Criterion Task (partner checked)</th>
</tr>
</thead>
</table>
| Have a teammate observe you perform this drill making sure that you satisfy all 3 performance cues in order to qualify as a successful attempt.  
Perform this drill 5 times  
Once you have accomplished at least 4 successful attempts out of your 5, you may then progress to the next drill.  
If you complete 5 attempts without accomplishing at least 4 successful attempts, have your coach monitor you attempt another 5 attempts of this drill.  
Once you have started three consecutive practices with this drill and have mastered the criterion in each of those three practices, you may begin the following practice with the next drill in the progression. |

Fig 15. Slide Box
Takeoffs

This drill is the majority of the pole vault and consists of all the elements previously practiced put together into one drill. The beginning version of this drill that will be described will be of a four left approach. As the athlete masters the four left approach, they will increase the approach length by one left at a time until they have reached a seven left approach.

Set up: A legal sized pole vault landing pit with a full runway of at least 100 feet with a measurement tape running alongside the runway with the zero point starting at the back edge of the box. To begin this drill, the athlete must have an accurate measurement of where they should start their approach from. Take the appropriate approach used for the slide box and it’s appropriate check mark (if the approach is longer than a four left approach) and transfer it to the runway with the pole vault pit.

Description:

Once the athlete has their approach and check mark (if over a four left approach) marked and ready to go, they address their pole grip and hold the pole at the high carry position with the right hand next to the right hip and the left hand in front of the center of the chest, left arm supporting underneath the pole. The athlete will step back with the right foot and rock back on the left. The athlete will begin to run down the track stepping with their right foot first and counting every left foot that contacts the ground, running for a total of four lefts.

During the run it’s important that the athlete drive down the track with their first two lefts and then begin to transition from those two driving steps into an accelerated run. These two driving lefts help build consistency in the run and overall maximum speed once at the takeoff. The athlete is running with tall upright posture running with high knees and ankles dorsiflexed. As the athlete is nearing the end of their run, they need to be dropping the pole to get ready for the takeoff. From the beginning of the run the pole tip should be carried at a 45 degree angle for
a four left approach, however, for the remaining approaches the pole should be held high, slightly past vertical to keep the athlete feeling comfortable holding the pole. After this point the remainder of the run and pole drop is precisely like the one, two, three… plant, two, three drill. The pole tip should be slightly overhead just after “two”, and both hands should be extended with the right hand overhead and the body jumping up into the right hand by “jump”. When the athlete goes to put the pole tip down they need to make sure that it makes it into the box and that they have both arms pushing up as they jump up into their takeoff. If done correctly the slide box should move out in front of the athlete as they takeoff the ground.

**Common Errors:**

Not having the arms up and pushing up is a problem for this drill, arms are either bent overhead or reached of in front of the athletes body. The athlete must realize that both arms must be pushing up before the pole tip hits the slide box in order to effectively push the slide box.

Letting the athlete’s shoulders rotate as they’re running. This will slow the athlete down greatly as they are running down the runway. It’s important that the athlete focus on keeping their entire body square to where they are running towards. Oftentimes the athlete’s low right hand as they’re carrying the pole can contribute to this problem. Have the athlete carry the pole right next to their right hip and they should be able to keep their shoulders more square to where they’re running.

A big problem for this drill is that athletes aren’t keeping their pole drop in time with their stride cadence. This is typically the result of the athlete dropping the pole in abrupt and robotic like movements that aren’t fluid. The athlete must focus on keeping the entire pole drop one continuous fluid movement until the pole tip hits the ground. If the athlete is keeping the pole drop fluid and they are still late on their checkpoints, they either need to drop the pole sooner
or merely drop the pole faster, however the athlete still needs to continue keeping the pole drop fluid.

Another big problem for this drill is that athlete will slow down towards the end of their run in an effort to give themselves more time to drop the pole properly. This is extremely dangerous due to the fact that it is the athlete’s speed that helps get them into the landing pit. The priority given to the athlete trying to fix this problem should be to have them bring as much controllable speed as they possibly can off the ground with them during their takeoff.

Tall running posture can oftentimes be overlooked by the athlete if they are only focusing on their pole drop and/or takeoff. The athlete must divert their attention to good running mechanics, pulling the heel up underneath the body, ankles dorsiflexed once foot leave the ground and knees brought up high.

Not jumping off of the ground before the pole tip touches the back of the box is the most common mistake of this drill and should be addressed immediately. Athletes who make this mistake either wait too long to try and jump or they don’t jump at all and see if their pole can pull them off of the ground. The athlete needs to be comfortable with the fact that they will likely feel weightless for a split second between them being in the air and the pole tip contacting the back of the box. The main focus for correcting this mistake is focusing the athlete’s attention to jumping as tall as they can over the pole before it touches the back of the box.

A very important factor to monitor for this drill is the body angle once it leave the ground. For the other takeoff drills it is easier to monitor this because it’s in relation to the stiff pole that the athlete is jumping on however in this case the pole will likely be bending thereby inhibiting the athletes ability to have their body truly stay behind the pole. What is done to monitor this is to look at the athlete torso angle as they leave the ground and travel through the air, if the athlete’s torso angle is perpendicular to the ground with both hands pushing overhead,
then the athlete is performing the takeoff correctly. If the athlete’s torso angle is diagonal with their hips out in front of the remainder of their bodies, then they are not executing a proper takeoff and are either using their arms incorrectly, not jumping off of the ground at the point of takeoff or they are just taking off from an incorrect sport on the runway either because they started too close on the runway or executed a poor run. To correct any of these problems please refer to any of the other drills mentioned before to address the potential issue at hand.
## Takeoffs

**Drill:** 4 left takeoffs, 5 left takeoffs, 6 left takeoffs, 7 left takeoffs  
**Equipment needed:** 30-40 meters of pole vault runway, pole vault pit, measuring tape, and a pole

<table>
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<tbody>
<tr>
<td>1. Proper pole run (see pole run sheet for clarification if needed)</td>
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<tr>
<td>2. Jump up into the pit with hands overhead before pole tip touches the back of the box</td>
</tr>
<tr>
<td>3. Push the pole up high with a nice and high bend while maintaining upright posture.</td>
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</tbody>
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<tr>
<td>You aren’t trying to bend the pole at all, in fact your trying to bend the pole as least as possible, make sure you’re jumping up into the takeoff.</td>
</tr>
<tr>
<td>The pole drop will begin to drop around the fourth or fifth to last step depending on your speed after that the last three left should be exactly like the 1,2,3…plant, 2,3 drill.</td>
</tr>
<tr>
<td>Measure out your approach and record your distance to see if your being consistent, also establish a checkmark within your approach for your 5 left, 6 left and 7 left approaches to verify your consistency.</td>
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<td>(Remember the 1,2,3…plant,2,3 drill)</td>
</tr>
<tr>
<td>2. Slowing down at the end of the run to keep in time with pole drop.</td>
</tr>
<tr>
<td>(Keep your speed going off of the takeoff)</td>
</tr>
<tr>
<td>3. Pulling down with the right arm and/or blocking out with the left arm</td>
</tr>
<tr>
<td>(Push straight up with both arms)</td>
</tr>
<tr>
<td>4. Hips swing out in front of the chest once off the ground or leaning back at takeoff</td>
</tr>
<tr>
<td>(Keep the chest open and bring your speed with you jumping off of the ground)</td>
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</table>

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<td>If you complete 5 attempts without accomplishing at least 4 successful attempts, have your coach monitor you attempt another 5 attempts of this drill.</td>
</tr>
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<td>Once you have started three consecutive practices with this drill and have mastered the criterion in each of those three practices, you may begin the following practice with the next drill in the progression.</td>
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*Figure 16. Takeoffs*
Chapter 5
DISCUSSION

The purpose of this project was to create a Personalized System of Instruction for the run and takeoff aspects of the pole vault in an effort to help athlete’s land consistently more on the pit and make the pole vault safer. There has been recent developments in the sport of pole vaulting to provide coaching safety classes to coaches with little to no experience however there is only education on what is proper form however these classes don’t provide any progression for the athletes or plan for the coach to implement with their athletes.

The manual features 26 drills taken from manuals as well as the authors personal experience with written and video explanations of these drills. These 26 drills have been organized in a specific order to provide optimal transfer of proper technique into the next drill as well as transfer of technique that would elicit a safe result. With each drill the athlete must demonstrate to a fellow teammate and/or their coach that they can satisfy the specified mastery criterion before finishing that drill in the progression and advancing to the next drill. The minimum mastery criteria for any drill is an 80% success rate, this was used to ensure that the athlete truly has a firm grip on what the proper technique is and is also intended that the athlete will have to attempt the drills multiple times before they accomplish their 80% success allowing for multiple repetitions for motor development and optimal transfer. This format not only ensures that an athlete may not advance without truly mastering the previous skill, it makes it easier for athletes to learn at their own specific rate and not be held back by a slower learner or feel rushed by a faster learner. This format can also ensure that the coach has more time to provide feedback to their athletes rather than spend time trying to organize their athletes into one collective drill.
Manuals outlining some proper drills have been created and used within the coaching community however there still hasn’t been any manual specifying when it’s appropriate for an athlete to discontinue practicing one aspect of the vault and then proceed to another aspect of the vault. This manual should help in ensuring both the athlete and the coach that they have not overlooked any aspect of the pole vault run and/or takeoff and they have worked with enough diligence to prove that the athlete is suitable to proceed to the next aspect of their technical development.

It was discovered that when performing this drill progression, that the coach and athlete must have a great deal of patience. All too often, athletes and coaches are wanting to progress to the next drill before they have earned the right to. It will be extremely useful to both the athlete and the coach to constantly remind themselves that this is for the best and will pay out in the end. To progress to other drills before they are intended to could build bad habits that could contradict the good habits mastered from the earlier drills in the progression.

The swing, inversion, turn, and flyaway aspects of the pole vault were not addressed in this project due to the fact that this manual was originally created to help make the pole vault safer and the fact that most of the athletes trajectory is determined my their run and takeoff, this manual limited itself to specifically the run and takeoff aspects of the pole vault to ensure that the athlete is landing in the middle of the pit as intended. In the future, it can be useful to develop a manual incorporating the remainder of the technical aspects of the pole vault to ensure that athletes are taking advantage of their run and takeoff and using it not only towards a safe result, but a competitive mark as well. Another manual designed with a PSI progression for optimal performance would be very useful, especially for coaches who coach more events than the pole vault and have little time to set up/break down practices for their athletes. Coaches could remain
efficient and safe much more time managing practices and could be able to coach and provide feedback to their athletes.

If someone were to try to design a project similar to this, it would be wise for the future author to use a high definition camera when using their filming, this helps the resolution when going into freeze frame and slow motion options in the playback portion of the video. Having multiple athletes/actors would probably help the scheduling and would ensure that the filming schedule wouldn’t rely on one or two people, the future author could have multiple alternate athlete/actors that could fill in when need be. Additionally, not every athlete is going to be able to demonstrate every drill precisely how you want it done on their first attempt. Having multiple athletes to demonstrate drills during filming ensures that the author will not have to have too many takes on drills while trying to film the manual.

The author hopes that this manual will be used in the coaching community and can have a positive effect in making the pole vault a safer event. Additionally, it’s the goal of this author to change the mainstream thought of the safety in the pole vault and change it from increasing landing pit dimensions and implementing helmets and change it towards careful planning and implementation of proper technique that keeps athletes safe. The result of this manual will not be known until it has been used by multiple parties. The ultimate intention of this manual was to make coaching the pole vault easier for coaches and safer for athletes.
REFERENCES


Hannay, M (2003b). The Other Side of the Pole Vault Issue. *Coach and Athletic Director* (pp. 56-60).


Rambo, D (1998) *Have Fun! Jump High! Be Safe!* (pp. 1-5) Coach and Athletic Director


