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Effects of Triphasic Training on Strength and Power on Men's Volleyball Players

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EFFECTS OF TRIPHASIC TRAINING ON STRENGTH AND POWER ON MEN'S VOLLEYBALL PLAYERS

By

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Abstract

Triphasic training is a method popularized by Cal Dietz (Dietz & Peterson, 2012) which includes three different phases: accumulation, transmutation, and realization. Different goals are set for each phase with power development being the overarching theme. During the accumulation phase, the training block is split into the three muscle actions eccentric, isometric, and concentric. During each phase, one action is the emphasis of the program. The purpose of this study was to examine the effects of the accumulation phase of the triphasic training program on collegiate men's volleyball players 1-Repetition Max strength, vertical jump, and isometric force. Additionally, the researcher monitored the maintenance of the triphasic training program after a take-home transition period.

Fourteen (14) athletes on an NCAA Division II Men's Volleyball program from a Midwestern university completed all three testing periods, that included the vertical jump, isometric mid-thigh pull, front squat, and trap bar deadlift. After completing two weeks of eccentric and isometric training, the participants completed the second test. The last test was conducted after the participants completed a five-week take-home program during a holiday break that consisted of complex training.

The results showed significant increases in performance in the front squat, trap bar deadlift, and isometric mid-thigh pull after the two weeks of eccentric and isometric triphasic training. However, there was no change found in the vertical jump during this time. When comparing the second and third test, there was no significant drop off during the transition phase. This suggests that eccentric and isometric training for two weeks each will increase an individual's strength, but not power.

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CHAPTER ONE

INTRODUCTION

Background of the Problem

Volleyball is one of the most popular competitive sports in the world. The sport is characterized as an intermittent and explosive competition, involving frequent movements of jumping and diving (Sattler, Hadzic, Dervisevic, and Markovic 2015; Sheppard and Newton, 2012). A high level of strength, explosive power, speed, and agility are the key components of volleyball-specific physical fitness, and they are key predictors for success (Lehnert, Sigmund, Lipinska, Varekova, Hroch, Xaverova, Stansty, Hap, Zmijewski, 2017). A successful performance is largely determined by the capacity to demonstrate repeated bouts of maximal or near-maximal power (Holmberg, 2013; Marques, Gonzalez-Badillo, and Kluka, 2006). Strength and conditioning professionals strive to create training programs to help athletes achieve the highest level of success. Creating programs specific to the movements of the sport might not be ideal, but creating programs with exercises that facilitate increases in power output might be the most critical to high-level performance in volleyball (Hedrick, 2007; Holberg, 2013; Marques, Gonzalez-Badillo, and Kluka, 2006). Increases in power output help develop abilities to jump, accelerate, dive, and change direction quickly, which are all key components to volleyball.

In order to increase these components of the game, strength and conditioning professionals use a periodization strategy, which is a planned distribution of specific variations introduced into training methods and programs at regular time intervals in order to optimize gains in power, strength, hypertrophy, and motor skill, while at the

same time minimizing the risk of overtraining (Fleck, Case, Puhl, and Van Handel, 1985; Graham, 2002; Kluka, 2006; Kraemer, 1997; Marques, Gonzalez-Badillo; Plisk and Stone, 2003; Rhea, Ball, Phillips, and Burkett, 2002; Tan, 1999). The two main models followed are linear and non-linear periodization. Linear periodization has a constant training volume and loading scheme (Graham, 2002; Kluka, 2006; Marques, Gonzalez-Badillo; Stone 1999; Stone, O'Bryant, Schilling, Johnson, Pierce, Haff, Koch). Non-linear periodization, also known as undulating, is characterized by daily or weekly variations (Graham, 2002; Kluka, 2006; Marques, Gonzalez-Badillo; Rhea, Ball, Phillips, and Burkett, 2002). There are many different types of non-linear periodization programs that can be followed for strength and conditioning professionals. One non-linear program that has become popular in the last five years is triphasic training.

Triphasic training is a program that incorporates components of the block training method, the modified undulating method, and the three movements of the body to help stress the body optimally, generate a transfer of training, and prevent the body from being pulled in multiple directions (Dietz and Peterson, 2012). The main concepts of this training program is to work on the movements the body encounters when doing any movement eccentric, isometric, and concentric muscle actions. Each phase focuses mainly on one muscle action. A two-week block of eccentric and isometric muscle actions will be the focus of certain days of the lift. This allows the body to be able to absorb the load and be able to generate force when completing a concentric muscle movement.

Statement of Purpose

The purpose of this study is to determine the effects of the eccentric and isometric phases of the triphasic training program on collegiate men's volleyball players 1-RM strength, vertical jump, and isometric force. In addition, the researcher is interested in assessing the maintenance of the triphasic training program after a 5-week take home transition phase program. The triphasic training program is designed to generate more strength and force production during the off-season period of a men's volleyball program. The 5-week transition phase program is designed to be a take home program for the collegiate men's volleyball player right before they return for the start of the season (Christmas break). The transition phase program is designed to increase strength, as well as incorporate plyometric components. The triphasic program started on October 16th and the transition phase started immediately after the triphasic program was on November 27th.

Research Hypotheses

H1: There will be a positive change in 1-Repetition Max strength for collegiate male volleyball players following the 2 weeks of eccentric and 2 weeks of isometric resistance training.

H2: There will be a positive change in isometric force for collegiate male volleyball players following the 2 weeks of eccentric and 2 weeks of isometric resistance training.

H3: There will be a positive change in vertical jump height for collegiate male volleyball players following the 2 weeks of eccentric and 2 weeks of isometric resistance training.

H4: There will be no significant change in 1-Repetition Max strength for collegiate male volleyball players following a five-week transition phase emphasizing complex training.

H5: There will be no significant change in isometric force for collegiate male volleyball players following a five-week transition phase emphasizing complex training.

H6: There will be no significant change in vertical jump height for collegiate male volleyball players following a five-week transition phase emphasizing complex training.

Definition of Terms

Triphasic Training – A training program which incorporates components of the block training method, the modified undulating method, and the three movements of the body to help stress the body optimally, generate a transfer of training, and prevent the body from being pulled in multiple directions (Dietz and Peterson, 2012).

1-RM strength – The heaviest weight that can be lifted once, is the most common measure of weight-lifting strength at least in the general population (Ploutz-Snyder and Giamis, 2001).

Isometric Force – A measurement during an isometric mid-thigh pull in which the bar is at the mid-thigh, and the athlete keeps his/her shoulders over the bar and pulls on a loading cell, which calculates force (Thomas, Jones, Rothwell, Chiang, and Comfort, 2015).

Vertical Jump – Exercise that relies upon the ability of leg muscles to raise the center of gravity of the body. Vertical jump is commonly considered as a measure of leg power. It is extensively used to measure leg power for success in sports activities (Shetty and Etnyre, 1989).

Volleyball - A game for two teams in which the object is to keep a ball in motion, from side-to-side over a high net by striking it with the hands before it touches the ground (Hendrick, 2007; Holmberg, 2013; Sattler, Hadzic, Dervisevic, and Markovic 2015).

Significance of Study

The significance of this study is to determine if just the eccentric and isometric phases of the triphasic training protocols will help increase 1-RM strength, force production, and vertical jump height in male colligate volleyball players. This study will assist future strength and conditioning specialists to determine if triphasic training is the proper program to help improve strength, force development and vertical jump height. Additionally, there is an exploratory study to determine if a 5-week transition program with complex training will help maintain the effects seen in the triphasic program.

Delimitations

Collegiate male volleyball players were invited to participate in this study. Athletes are required to participate in strength and conditioning sessions each week. The participating athletes had completed at least four weeks of training with the strength and conditioning coach and lead investigator at the initiation of the study. Therefore, the learning curve of the exercises and the coach was a primary consideration based upon strength and conditioning training age.

Limitations

The participants must give full effort into the exercises and the isometric force test and vertical jump to ensure the accurate results. If effort is not given by the participants, then the results might be compromised.

The amount of equipment in a Midwestern University Fitness Center limits the exercise selection of the program.

Participant's agreement to follow the protocols and stick with the program given to them. The participants were asked to refrain from any additional weight training outside the given program. All participants were also asked to limit other physical activity so as not to affect the results.

The timing of the tests, due to the volleyball schedule and the schedule of Lindenwood Fitness Center, was a difficult variable for the researcher to control for.

The study took place during the fall season and the start of the spring season, so the athletes were completing practices for up to six hours a day prior to the program and the pre, mid, and post-tests.

CHAPTER TWO

LITERATURE REVIEW

Introduction

Over the past fifteen plus years, the world of athletics has grown exponentially. Athletes have access to items to help them succeed more than ever. At all levels, athletes have access to more tools to help them gain strength, speed, quickness, faster recoveries, and view their opponent's film at different levels than ever before. With all these new tools in the field, new professions have been created to provide an expert within each component. Strength and conditioning coaches, athletic trainers, sports nutritionists, sports psychologists, and video coordinators are all jobs that have been created from all the advances in technology. As a result with all the changes in technology, sports have changed, some say for the better others say for the worse. Exercise science research has had an astonishing effect on the advances within sport.

Strength and conditioning is a profession, which started in the late 1960's at the University of Nebraska, Lincoln. The football coach at the time, Bob Devaney, was struggling to keep his job at the university after a losing season. He knew he had to start making changes, or he would no longer have a job. In response, Devaney hired Boyd Epley and together, they created Husker Power, which became one of the most successful strength and conditioning programs in history. The football team went on to win the national championship two of the first three seasons after Epley was hired. Schools from around the nation started to realize the need for strength and conditioning coaches for all sports. By 1978, hundreds of strength and conditioning coaches had been hired, and they decided to come together and create an association focused on improving their field. The

birth of the National Strength and Conditioning Association was on July 28th 1978, in Lincoln, Nebraska where the first conference was held. There were 76 attendees.

As the years passed, more and more universities and professional teams saw the need for strength and conditioning coaches. The profession has grown to being a very competitive field where it takes a long time to receive a full-time job. The standard protocol to become a full-time strength and conditioning coach is to intern, volunteer, complete a graduate assistant position and then hopefully earn a full-time position. Most schools now are looking for 2-3 years of experience along with a Master's degree. The field has come a long way in such a short amount of time. As the years pass and the technology grows, so too does the field of strength and conditioning. As technology has improved, so has the research put behind finding out what is best for the athletes. Advances in exercise physiology, anatomy, periodization, measures of strength and power, and corrective exercises have changed the profession. A profession once known for creating body builders and powerlifters has turned into a sports-specific field where improving athletic performance is key. Every strength coach uses different strategies to find the perfect balance of creating the best possible athlete. From research and experimentation, evidence-based practice has become the norm with everyone claiming their program is best.

Strength and conditioning coaches are constantly trying new ideas, whether they are based off of an old principle or new ideas they came up with. However, every seasoned strength and conditioning coach will tell an intern, or young coach not try to re-create the wheel, all the information is out there for you, just think about it and interpret it the way it makes sense to you. This is because in this field there is no black and white

answers. Every athlete is different and responds uniquely to different stimuli. Therefore, something that works with a team one year may have no effect the next. In return, coaches are always changing programs and changing periodization from one year to the next to make sure their athletes are competitive. This also does not mean a coach will not use aspects or exercises from the year before. What this means is the coach will use what he/she feels is best to create a change from what the team needs. A coach will sit down, figure out a goal the team needs, and then create a program from that goal. If the goal is the same each year then there may be similar exercises and rep schemes, but each team and each sport has different goals they are trying to accomplish.

A theme in sports today is power. How can a strength and conditioning coach help an athlete develop power and get it to transfer to the playing field or court? Power is defined as the rate of doing work (Sophia Nimphius, PhD, CSCS,*D from Developing Power by National Strength and Conditioning Association (NSCA), Mike R. McGuigan, PhD, CSCS,*D, editor). Power is measured in Watts (W), which is defined as joule (J) per second. A joule is the unit measurement for work, which is the product of force and displacement. Velocity equals displacement divided by time, which simplifies the equation to power equals force (N) times velocity (m/s) (Power (W) = Force (N) * Velocity (m/s)). Therefore, when watching sports the results are in the power an athlete may exert. For example, a volleyball player shows multiple bouts of power throughout a normal play. Firstly, the athlete demonstrates power by jumping to hit the ball and secondly, by hitting the ball. More specifically, the jump provides a glimpse of how much power an athlete has through his or her ability to put force into the ground and quickly displace the body from the court as fast as possible. When the athlete swings at

the ball, he or she is exerting force from his arm and body as fast as possible to create power on the ball, which projects the ball forward. In every sport, there are multiple examples of how power is applied. Therefore, in theory, a strength and conditioning coach should do everything he/she can to help athletes create the most power possible.

Looking at the power equation, force is a main component in creating power. The amount of force one puts into an object affects how much power is produced. Therefore, force is one major component of how much power is produced during a sporting event. In theory, the more force one is able to put into the ground the higher one will jump, the faster one will run, and the quicker one will move. Another portion of the equation is velocity, which is how fast one is able to move an object or itself. The faster one produces force into the ground, and leaves the ground, the higher one will be able to jump. Putting the two factors of power together can affect how high an athlete is able to jump.

As strength and conditioning coaches learn this information, they start to ponder ideas on how to help increase these two factors. They consider multiple periodization tactics in order to create an annual strength and conditioning program that will help their athletes peak at the appropriate times throughout the year. During the off-season, the periodization strategy may be more focused on developing strength in order to develop a base of strength for the season. This may change to a power phase as the season starts to approach. In season, it may consist of strength and power days throughout the week, so the athletes are able to keep the strong base the coach was able to build and create the power one was able to develop over time.

The purpose of this study was to determine the effects of the eccentric and isometric phases of the triphasic training program on collegiate men's volleyball players 1-RM strength, vertical jump, and isometric force. Furthermore, the researcher monitored the maintenance of the triphasic training program after a 5-week take-home transition phase program. The triphasic training program was designed to generate more strength and force production during the off-season period of a men's volleyball program. The 5-week transition phase program was designed to be a take home program for the collegiate men's volleyball player right before they return for the start of the season. The transition phase program is designed to increase strength, as well as incorporate plyometric components.

Volleyball

Volleyball is one of the most popular sports in the world (Kraemer, Caldwell & Bamhart, 2017; Sattler, Hadzic, Dervisec, & Markovic, 2015). It is characterized by short explosive movement patterns, which the objective is to pass the ball over the net in such a way that the opponent is unable to successfully return the ball back over the net (Hedrick, 2007; Holmberg, 2013; Sattler, Hadzic, Dervisec, & Markovic, 2015). For this to occur, many actions take place, such as serving, passing, setting, spiking, blocking, and diving (Holmberg, 2013; Sattler, Hadzic, Dervisec, & Markovic, 2015). The time frame that all of this occurs is called a rally, after each rally the team has about 10-15 seconds until the next rally occurs.

A volleyball match is broken up into five sets. The first team to win three sets wins the match. The first team to twenty-five points wins the set. However, the team must win by two points, which means sets may exceed the twenty-five point mark until a team

has a two-point lead. During the fifth set, the first team to fifteen-points, winning by two-points, wins the match.

Volleyball Demands

In the sport of volleyball, a successful performance is determined by the capacity to demonstrate repeated bouts of maximal or near-maximal power (Hedrick, 2007; Holmberg, 2013). The main movements done at a maximal or near-maximal state that make up the game are frequent changes of direction sprints, diving to pass a ball, and repeated overhead movements when spiking or blocking (Black 1995; Cardoso Marques, Gonzalez-Badillo & Kluka, 2006; Gadeken, 1999; Hedrick, 2007; Holmberg, 2013; Sattler, Hadzic, Dervisec, & Markovic, 2015). The average work to rest ratio is 1:2.4 or seven seconds of work to sixteen seconds of rest (Hedrick, 2007; Holmberg, 2013). Therefore, volleyball athletes must be able to sustain performing maximal movements throughout the duration of a match.

The high-intensity bouts of exercise with relatively short recovery periods, coupled with the total duration of the match, suggests that volleyball athletes require a well-developed creatine phosphate and glycolytic metabolic pathways, as well as reasonably well-developed aerobic capabilities (Kasabalis, Douda, and Tokmakidis, 2005; Sheppard, Gabbett, Taylor, Dorman, Lebedew, and Borgeaud, 2007). Phosphocreatine is the main source of anaerobic energy for quick effort maximum power, which defines the sport of volleyball (Kasabalis, Douda, and Tokmakidis, 2005). Volleyball athletes have demonstrated some of the highest anaerobic power values compared to other sports athletes (Kasabalis, Douda, and Tokmakidis, 2005).

Considerable demands are also placed on the neuromuscular system during various movements of volleyball (Sheppard, Gabbett, Taylor, Dorman, Lebedew, and Borgeaud, 2007). The vertical jump is affected by both muscular and neural aspects. In order, to jump higher, the greatest vertical acceleration should be achieved before leaving the ground (Zic and Lidor, 2010). In order to achieve the greatest vertical acceleration, the athlete must create as much force as possible over the shortest amount of time (Zic and Lidor, 2010). Overall, during the major movements of volleyball the neuromuscular system is the driving force.

The primary movement in volleyball is the vertical jump, setting, serving, spiking, and blocking are all movements that require a vertical jump (Cardoso Marques, Gonzalez-Badillo & Kluka, 2006; Sattler, Hadzic, Dervisec, & Markovic, 2015). The height of these jumps all vary and not all have to be maximal vertical jumps. For example, the jump during a set and a serve are not always maximal or need to be maximal. However, when jumping to spike or block a ball, the jumps are more near maximal efforts. For instance, during a block jump, the height of the jump is a key component of the play, the higher the jump the more effectiveness against the opponent occurs (Sattler, Hadzic, Dervisec, & Markovic, 2015). Whereas, during an attack jump the higher an athlete jumps the more angles the athlete can play and achieve success (Sattler, Hadzic, Dervisec, & Markovic, 2015).

The secondary movement in volleyball is lateral movement. Being able to move side to side is a key component of the game, being able to react laterally to a ball defensively will save points. Likewise, being able to move laterally to execute a block jump is a key component of the game, which is often overlooked. Overall, lateral

movement is a key component of volleyball and should be a focus during training sessions (Cortell-Tormo, Pérez-Turpin, Chinchilla, Cejuela, and Suárez, 2011).

Strength and Conditioning Needs for Volleyball

Physiological assessments of volleyball athletes have typically involved speed, muscular power, and muscular aerobic power (Sheppard, Gabbett, Taylor, Dorman, Lebedew, and Borgeaud, 2007). Some of the traditional tests are the 10-yard sprint, the 20-yard sprint, the pro-agility test, a 1-RM squat, deadlift, power clean, loaded squat-jump, vertical jump, block jump, approach jump, and a multi-stage fitness test. All these tests have traditionally given strength and conditioning coaches parameters in which to improve their athletes. The hope is after improving these qualities, the transfer to becoming a better volleyball athlete is achieved.

As stated earlier the vertical jump is a key component to the sport of volleyball. Most volleyball coaches would consider vertical jumping ability as the most important physical attribute for volleyball athletes (Sheppard, Newton, and McGuigan, 2007). Many factors play into improving the vertical jump, one of the main factors is the stretch-shortening-cycle (Sheppard, Hobson, Barker, Taylor, Chapman, McGuigan, Newton, 2008; Sheppard, Newton, and McGuigan, 2007). When using the stretch-shortening-cycle, greater vertical jump heights are achieved compared to jumps where the stretch-shortening-cycle does not take place. This phenomenon is attributed to both neurogenic and myogenic factors that are enhanced by the eccentric loading that the stretch-shortening-cycle provides (Sheppard, Hobson, Barker, Taylor, Chapman, McGuigan, Newton, 2008; Sheppard, Newton, and McGuigan, 2007). Therefore, training activities

that incorporate the stretch-shortening-cycle, but also have an eccentric portion, are important movements when training volleyball players.

Research has shown that resistance training can improve athletes maximal force and power production, reduce the incidence of injury, and contribute to faster injury recovery times (Cardoso Marques, Gonzalez-Badillo & Kluka, 2006; Fleck, Case, Puhl, and Van Handel, 1985). With the incorporation of resistance training, athletes can increase strength, force, and power, which helps improve different aspects of the sport of volleyball. The more velocity one can create during the countermovement portion of the vertical jump, the more force an athlete can put into the ground, the higher the athlete can jump. The vertical jump performance is largely dependent on the force produced at the hip, knee and ankle joints (Holmberg, 2013).

Incorporating weightlifting movements, like the power clean, has many benefits, such as development of power, positive changes in muscle fiber adaptation, aerobic and anaerobic metabolism, balance, flexibility, kinesthetic awareness, and lean body mass are all key components (Holmberg, 2013). Incorporating power cleans into a resistance training program not only helps produce all the benefits added above, but also helps teach body awareness and technique. Learning a new technique an athlete might not have ever done before helps with the overall development of the athlete. The physical advantages of the power clean are general body power, repeated bouts of high-intensity exercise, acceleration and deceleration of the lower body, and a movement that simulates a vertical jump (Cardoso Marques, Gonzalez-Badillo & Kluka, 2006; Holmberg, 2013).

Other resistance training movement that are beneficial for volleyball athletes are the squat, deadlift, unilateral lower body movements, a hinging pattern movement (RDL),

upper body pushing and pulling movements, and core stability. These movements play a key role in the conditioning of the volleyball athletes. Being able to develop lower body strength is key when trying to increase vertical jump. Some of the major ways to increase this are incorporating the squat, deadlift, a hinging pattern, and unilateral patterns.

Squatting pattern is a complex movement involving the ankles, knees, and hip joints. Due to its multi-joint nature, it is often referred to as the "pillar of strength" exercise for the lower extremity (McCaw and Melrose, 1999). The squat is generally included in training programs to develop the quadriceps, hamstrings, and triceps surae (McCaw and Melrose, 1999). The exercise consists of lowering and raising ones center of gravity by bending at the knees and the hips, followed by extension of the knees and hips.

The trap bar deadlift is common in the field of strength and conditioning and is used more frequently than a traditional conventional deadlift. The trap bar was designed to increase the safety of the exercise by allowing the load to stay closer to the body (Lockie, Moreno, Lazar, Risso, Liu, Stage, Birmingham-Babauta, Torne, Stokes, Giuliano, Davis, Orjalo, and Callaghan, 2017). Keeping the bar closer to the body and raising the height of the handles helps reduce injury of the lumbar spine. The benefits of the trap bar deadlift involve lower-body focused strength of the legs, hips, back, and torso (Lockie, Moreno, Lazar, Risso, Liu, Stage, Birmingham-Babauta, Torne, Stokes, Giuliano, Davis, Orjalo, and Callaghan, 2017).

Other movements play important roles when translating to the sport of volleyball. Unilateral movements are beneficial movements that translate to the court. Being able to have balance and control off a single leg to jump or move laterally is very important. Overall, upper body strength is important because of the nature of the sport. Being able to

jump high is only one aspect of the sport. Being able to hit the ball with power separates elite volleyball athletes. With that being said, the core is important for this to occur as well, the swing does not only happen from the arm, the core initiates it. Incorporating core stabilization movements will not only benefit the athlete from a performance standpoint, but reduce the risk of injury as well.

Overall, when looking at the sport of volleyball, the main two movements to focus on are vertical jump and lateral movement. However, those movements do not get better by only completing those specific movements. Incorporating lower body strength and power movements along with unilateral lower body movements will improve athletic improvement. Keeping the athletes healthy is another demand strength and condition coaches must be aware of, so incorporating total upper body strength and core stability are vital.

Periodization

In the profession of strength and conditioning, the terms planning, programming, and periodization are all used as if they mean the same thing. In reality, they don't. Planning is the process of arranging a training program into long and short phases to achieve a training goal (Bompa and Buzzichelli, 2015, p.88). This is the part of the process where a coach will sit down and look at the year. They will then input all the data into a sheet to see how many days a week he/she will get a team, when games and practices will be, how hard will a certain stretch in the season will be, when the team needs to be peaking, how long is the off-season going to be, and when pre-season and post-season will start. The act of planning is to create a planned template empty of exercises. Programming is the act of filling this template with content from training

modalities (Bompa and Buzzichelli, 2015, p.88). This is the process of figuring out which exercises work best for the athletes or sports you are working with. Lastly, periodization incorporates both planning and programming, in other words, the structure of the annual plan and its content as it changes over time (Bompa and Buzzichelli, 2015; Issurin, 2010; Macaluso, 2010; Turner, 2011). This is the ever-changing sets, repetitions, and intensities that change as the off-season, pre-season, in-season, and post-season take place.

Periodization is the planned distribution or variation in training means and methods on a periodic or cyclic basis (Baechle and Earle, 2008; Issurin, 2010; Kiely, 2012; Macaluso, 2010, Mann, Thyfault, Ivey, Sayers, 2010). Periodization involves two basic concepts: periodization of the annual plan and periodization of the biomotor abilities (Bompa and Buzzichelli, 2015; Kiely, 2012; Macaluso, 2010; Naclerio, Moody, and Chapman, 2013). Periodization of the annual plan involves dividing up the program into units in order to better manage the training and adaptation process, and hopefully ensure that the athletes are peaking at the appropriate times (Bompa and Buzzichelli, 2015; Kiely, 2012; Macaluso, 2010; Naclerio, Moody, and Chapman, 2013). This is a main reason for periodization, to ensure that athletes are getting training adaptations at appropriate times throughout the year. Also, this makes sure the training sessions are not fatiguing athletes during their competitive seasons, to ensure that peaking is happening while in season. Periodization helps coaches plan a rational alternation of loading and unloading periods in the training phases, thus maximizing adaptation and performance while avoiding the accumulation of critical levels of fatigue and the onset of overtraining (Bompa and Buzzichelli, 2015; Kiely, 2012; Macaluso, 2010; Naclerio, Moody, and Chapman, 2013).

Periodization of the biomotor abilities allows athletes to develop their biomotor abilities (strength, speed, endurance) to an optimal level as the basis for a higher level of sport performance (Bompa and Buzzichelli, 2015; Naclerio, Moody, and Chapman, 2013). This is based off the premise that positive adaptations in the body requires optimal timing of the combination of the right amount of work and recovery, with the use of periodization, and the organization part of the process, gives athletes optimal timing for adaptations to occur. The development of the biomotor abilities and the improvement of the technical and tactical factors require a progressive approach in which the intensity of training stimuli is gradually increased on the basis of the previously induced morphological and functional adaptations (Bompa and Buzzichelli, 2015, p.88).

As stated above, periodization is the combination of planning and programming, which leads into periodization cycles. Periodization cycles are different phases of time which help organize the annual program. There are three cycles: the macrocycle, mesocycle, and the microcycle (Kiely, 2012; Macaluso, 2010; Naclerio, Moody, and Chapman, 2013). The macrocycle is the entire training year but may also be a period of many months up to four years (mostly seen in Olympic athletes) (Baechle and Earle, 2008; Lyakh, Mikolajec, Bujas, and Litkowycz, 2013; Naclerio, Moody, Chapman, 2013). A mesocycle is within the macrocycle and lasts several weeks at a time, which is dependent on the goal at hand (Baechle and Earle, 2008; Lyakh, Mikolajec, Bujas, and Litkowycz, 2013; Naclerio, Moody, and Chapman, 2013). Lastly, the microcycle is within the mesocycle and typically lasts a week at a time (Baechle and Earle, 2008; Lyakh, Mikolajec, Bujas, and Litkowycz, 2013; Naclerio, Moody, and Chapman, 2013). To describe the cycles in a simpler way, a macrocycle is the annual plan which states the

main goal of the training program. Then after looking at the main goal of a training program, it is broken down into a mesocycles where it is looked at one month at a time or broken down even further into smaller goals. This can be broken down even further into microcycles where each week is trying to help reach the goal of the mesocycle. Each day of the week has a goal to help accomplish the main goal at hand.

Methods

Periodization is the annual plan that focuses on athlete improvement. Within periodization, there are plans and programs which are in place to help do so. Periodization is the overall goal and each program within has a goal to help reach the main goal (Issurin, 2010; Kiely, 2012; Macaluso, 2010). These programs can be categorized in many ways. There are many types of programs strength and conditioning coaches can use or create to help improve an athlete. These types fall into two main categories: linear and non-linear (undulating) periodization.

Linear Periodization

Linear periodization is the classical type of periodization. It divides a strength training program into the different cycles mentioned above, macrocycles, mesocycles, and microcycles, gradually increasing the training intensity while decreasing the training volume within, and between, cycles (Bradley-Popovich, 2001; Issurin, 2010; Mann, Thyfault, Ivey, and Sayers, 2010; Prestes, De Lima, Frollini, Donatto, and Conte, 2009). A simple way of describing linear periodization is going through the phases mentioned in the preparatory phases. Every block would last the same amount of time and each exercise would be performed for the same amount of repetitions. First, there would be a

general preparatory phase (GPP), then a hypertrophy phase would take place, followed by a strength phase, and lastly ending with a power phase. For example, an exercise prescription may look like this: GPP 4x12 at 50-65%, Hypertrophy 3x8 at 60-75%, Strength 3x5 at 75-90%, and Power 3x2 at 80-95%. This follows the Prestes et al.,(2009) statement, that as volume decreases intensity increases (Bradley-Popovich, 2001; Mann, Thyfault, Ivey, and Sayers, 2010; Prestes, De Lima, Frollini, Donatto, and Conte, 2009).

The positives about linear periodization is the volume decreases as the season approaches and the intensity increase. However, the negatives about linear periodization is over time an athlete could lose the training effect (Bradley-Popovich, 2001; Rhea, Ball, Phillips, and Burkett, 2002). For example, the training effect seen during GPP will not be seen during the power phase. Linear periodization is good for novice weight room athletes because it allows them to draw some type of base for other things to come.

There are two different types of linear periodization, long linear periodization and short linear periodization. Long linear periodization on average lasts from three to four weeks in length and follows what is described above. The advantage of a long linear periodization is that it is good for beginners, as it allows for easy loads for technique learning and develops the ligaments and joints using lower intensities and greater volume. Long linear periodization's disadvantages are while developing one block the others will decrease, it can lead to stagnation, and if there is no variety in progressions it can lead to being boring for athletes. Short linear periodization uses shorter time intervals to develop a particular ability. Short linear periodization usually lasts one to two weeks and still follows the linear periodization principle of high volume low intensity to low volume high intensity. Some advantages of short linear periodization are the shorter

cycles should prevent de-training abilities, prevent boredom, and prevent over-training. Some disadvantages of short linear periodization are it is not appropriate for beginners because of the increase in intensity at a quicker rate than long linear. Also, one to two weeks of development of one stimuli may not be enough to see a change in the attribute.

Undulating (Non-Linear) Periodization

Undulating or non-linear periodization is a type of program which changes the volume and intensity on a daily basis (Prestes, Frollini, De Lima, Donatto, Foschini, Marqueti, Figueira, and Fleck, 2009; Rhea, Ball, Phillips, and Burkett, 2002). Undulating periodization has no linear increases from high volume, low intensity to low volume, high intensity, but rather utilizes waves. Each day is a different volume and intensity scheme. Like linear periodization there can be long and short undulating periodization programs.

Classic undulating periodization incorporates progressive increases in intensity throughout the week with a decrease in total volume (Prestes, Frollini, De Lima, Donatto, Foschini, Marqueti, Figueira, and Fleck, 2009; Rhea, Ball, Phillips, Burkett, 2002). Daily (modified) undulating periodization is where day one is a medium heavy day, day two is a high intensity day, and day three is a high volume day. This allows athletes more time to recover from the high-volume days on the weekends and not set themselves up for failure throughout the week (Buford, Rossi, Smith, and Warren, 2007; Dietz and Peterson, 2012; Rhea, Ball, Phillips, and Burkett, 2002).

Rhea, Ball Phillips, and Burkett (2002) completed a study that compared linear periodization to undulating periodization and found undulating periodization to be significantly greater than linear periodization. Making program alterations on a daily

basis was more effective in eliciting strength gains than doing so every four weeks (Bradley-Popovich, 2001; Buford, Rossi, Smith, Warren, 2007; Rhea, Ball, Phillips, and Burkett, 2002). However, at first, a lot of strength and conditioning coaches are not fans of the undulating periodization. Due to the fact that athletes are constantly changing volume and intensities, athletes are not able to develop one specific quality. However, research has proven to show results in increased strength over time using undulating periodization. Therefore, strength and conditioning coaches have been opening up to the idea of undulating periodization.

Strength and conditioning coaches use these two main principles (linear and non-linear periodization) every day to create different programs for their athletes. Linear and non-linear periodization is the basis of every program that is written and then from there, different variations are created to make different programs. Some of the most popular types of programs are reverse-linear periodization, concurrent method for periodization, conjugate method of periodization, tier system periodization, wave method, velocity-based training, and tri-phasic training periodization. These are just a few of the major types of periodization methods coaches use to help improve their athletes. Like everything, these methods have pros and cons. The question is do the pros outweigh the cons?

Triphasic

Triphasic training became popular from a strength and conditioning coach from the University of Minnesota named Cal Dietz. He popularized a training protocol in which each phase of a movement (eccentric, isometric, and concentric) became an emphasis. He mixed it with block periodization and modified undulating periodization

method and called it triphasic training (Dietz and Van Dyke, 2015). The three stages of block periodization emphasized are accumulation, transmutation, and realization (Dietz and Van Dyke, 2015). The first stage, accumulation, is the building block of the program. During this block, the main emphasis is the individual block training of the eccentric, isometric, and concentric actions, which play a major role in creating the stretch-shortening cycle (Dietz and Van Dyke, 2015). The main purpose of the accumulation phase is to increase basic motor skills, which serve as the foundation for adaptations such as power and sports-specific speed. The goal of the transmutation phase is to maximize power output (Deitz and Van Dyke, 2015). Power is developed in this stage by completing high-velocity repetitions with lower loads. The realization phase is meant to become more sports-specific and works to maximize the power created during the transmutation phase by decreasing the loads and completing maximal velocity repetitions (Dietz and Van Dyke, 2015).

Within the accumulation phase, Deitz combines block periodization and a modified undulating programing method (Dietz and Van Dyke, 2015). Dietz takes the model on modified undulating in which his first training days are his medium heavy day, his second training days are his high intensity day, and his third training day is a high-volume day (Dietz and Peterson, 2012 p.33). Then he took the concept of the body moving in three phases, eccentric, isometric, and concentric and added them to his first and third training days. Every block of two to four weeks, an athlete switches to the next phase. For example, week one to four an athlete works on eccentric lowering on Mondays and Fridays, and on Wednesday, there are no tempos, but athletes work at above 90% of their 1RM. Then during weeks 5 through 8, the athlete works on holding the isometric

phase of the movement on first and third training days, where on the second training day they work a high concentric intensity. Lastly, weeks nine through twelve, the concentric phase is focused on every day of the week with intensities varying (Dietz and Peterson, 2012).

Cal Dietz learned over time, the key to improving sports performance in every athlete isn't about who is the strongest. The key to improved sports performance is producing the most force in the least amount of time (Dietz and Peterson, 2012; Dietz and Van Dyke, 2015). This happens when an athlete can absorb more force eccentrically, allowing the athlete, in turn to apply the force concentrically in less amount of time. (Dietz and Peterson, 2012, p. 73). Dietz points this concept out by giving an example of two shot-put athletes. Both lifted comparable loads in the weight room and had the same one-rep max on bench press. However one consistently threw ten feet farther than the other. When Dietz used the force plate to analyze both throwers' power over the bench press, he found the more successful shot-putter was absorbing more force eccentrically at a higher velocity. By doing so, he was loading up the muscles with more energy to use concentrically. Therefore the longer throws of the shot put were not from being the strongest, but rather from being able to create more force (Dietz and Van Dyke, 2015).

Another strength and conditioning coach at the University of Denver, Matt Shaw, has also tried this concept and has seen remarkable results. Matt Shaw is responsible for the University of Denver's men's hockey team, during a ten-week training program, Shaw decided to try the triphasic training methods. Having access to force plate evaluations, Shaw completed standard pre-summer strength and vertical jump baseline tests (Shaw, 2015). After completing the pilot program and analyzing the data from the

force plates, Shaw saw striking results. Measurements from a repeat skater jump test (side to side jumping as fast as possible) showed a reduction of forty-four percent in ground-contact time, a thirty-eight percent increase in rate of force production, and a twenty-two percent increase in peak concentric force (Shaw, 2015). In the vertical jump test, only four athletes jumped greater than thirty inches during the pre-test. After the ten-week triphasic training program, ten athletes completed vertical jumps greater than thirty inches. The team average increased from 28.75 to 31.12 inches (Shaw, 2015).

Not much research has been completed on triphasic training, but there is extensive research on the different phases of triphasic training. There are multiple studies on eccentric, isometric, and concentric training methods and the effects it has on performance and rehabilitation. However, there have not been any studies that put all the training styles together to tell the true results of the three muscle movements in one training program.

Eccentric Training

Eccentric training is a popular training modality that is used by healthy and injured athletes to improve muscle strength and explosiveness. (Inser-Horobeti, Dufour, Vautravers, Geny, Coudeyre, and Richard, 2013; Papadopoulos, Theodosiou, Bogdanis, Gkantiraga, Gissis, Sambanis, Souglis, and Sotiropoulos, 2014). An eccentric muscle action occurs when the muscle is forcibly lengthened or elongated. An eccentric contraction results when the force produced inside the muscle is less than what is applied to the muscle externally and results in active lengthening of the muscle fibers under some levels of load. (Mike, Cole, Herrera, VanDusseldorp, Kravitz, and Kerksick, 2016; Mike, Kerksick, and Kravitz, 2015; Munger, Archer, Leyva, Wong, Coburn, Costa, and Brown,

2017; Schoenfeld, Ogborn, Vigotsky, Franchi, and Krieger, 2017). The eccentric movement of an exercise is most commonly seen at the lowering phase of an exercise. For example, during the squat, deadlift, or bench press it is the lowering of the bar into the right amount of depth, the squat into the proper hip depth, the deadlift brings the bar back to the ground, and the bench press bringing the bar down to the chest.

When comparing concentric and eccentric muscle actions, eccentric muscle actions are able to produce greater force in amounts estimated to be 20-60% greater than force levels generated during concentric activities (Hollander, Kraemer, Kilpatrick, Ramadan, Reeves, Francois, Hebert, and Tryniecki, 2007; Mike, Cole, Herrera, VanDusseldorp, Kravitz, and Kerksick, 2016; Mike, Kerksick, and Kravitz, 2015). Hollander et al. (2007) conducted a study looking at the differences in maximal dynamic eccentric and concentric strength for six resistance exercises in young men and women. The exercises selected were multi-joint and single joint exercises that have been employed in many resistance training regimens. The results of the study demonstrated greater eccentric than concentric strength within 20-60% of one-repetition max in men, but not women (Hollander, Kraemer, Kilpatrick, Ramadan, Reeves, Francois, Hebert, and Tryniecki, 2007). Mike et al. (2016) also conducted a study that looked at the impact of eccentric training on strength, power production, vertical jump, and soreness. In this study, when testing the one-repetition Smith machine squat they found significant increases in maximal strength over a four-week eccentric training block (Mike, Cole, Herrera, VanDusseldorp, Kravitz, and Kerksick, 2016). In a study conducted by Cook et al., (2013) they compared the functional effects of traditional or eccentric exercise training blocks that incorporated downhill running and assisted countermovement jumps

in trained athletes. Their results demonstrated that eccentric training elicited greater improvements in upper- and lower-body strength than traditional resistance training (Cook, Beaven, and Kilduff, 2013). Overall, these studies have shown an increase in strength gains from implementing eccentric training in an untrained, trained, and elite individual. This is due to the fact that muscle exercise intensities during eccentric movements are higher (Roig, O'Brien, Kirk, Murray, McKinnon, Shadgan, and Reid, 2009).

Eccentric or plyometric training is frequently used by speed and power athletes aiming to improve muscular strength, explosiveness, and jumping performance (Cook, Beaven, and Kilduff, 2013; Papadopoulos, Theodosiou, Bogdanis, Gkantiraga, Gissis, Sambanis, Souglis, and Sotiropoulos, 2014; Roig, O'Brien, Kirk, Murray, McKinnon, Shadgan, and Reid, 2009). Eccentric contractions produce greater amounts of torque and force compared with concentric and isometric contractions (Ong, Lim, Chong, and Tan, 2015). Increases in power production have been shown to result from slower-speed training along with increases in agonist muscle activation (Mike, Cole, Herrera, VanDusseldorp, Kravitz, and Kerksick, 2016). Therefore, increases in eccentric strength help concentric performance by being able to produce more force into the ground.

Exercises focusing on the eccentric control, but which allow the concentric muscle action to allow for the muscles to not only be overloaded, also allow for the natural concentric muscle action which athletes use. Being able to increase power production while focusing on slower speeds allow for the body to work not only on improving overall force, but also helps with technique of the movement. Slowing the

movement down allows for the body to perfect the movement by moving segment by segment.

Overall, eccentric training has been used for years and has plenty of benefits as to why it should be a staple in most strength and conditioning programs. Technique, strength, force production, and explosiveness are all characteristics strength and conditioning coaches want to improve, and they are all characteristics eccentric training allows. The timing in which athletes should use eccentric training is important. Using a demanding method like eccentrics should be used when the athlete is not participating fully in the sport. Allowing for recovery after these days is important and should not be overlooked.

Isometric Training

An isometric action can be defined as one in which the proximal and distal attachments of a muscle do not move in relation to each other; muscle length stays the same (Dietz and Peterson, 2012 p. 92). This occurs when the force being exerted by a muscle equals the force being imposed by the load. The isometric action is more accurately defined as the joint angle remaining constant. The isometric movement is still a contraction and the muscles still move very minutely (Dietz and Peterson, 2012 p. 92). The isometric phase has two neurological processes that need to be trained to maximize the force transfer from eccentric to isometric contractions. Muscles need to increase their level of force production, as in the instance of decelerating and stopping eccentric contractions; they have two options, motor unit recruitment and rate coding (Dietz and Peterson, 2012 p. 93). Motor unit recruitment increases the number of muscle fibers that

fire. Rate coding increases the rate at which each of these fibers fire, which increases tension (Dietz and Peterson, 2012 p. 92).

Isometric training is starting to become popular within the field of strength and conditioning, however, there is not a ton of research backing up multi-joint movements and the results that can be seen during a training session. However, there is research promoting the neuromuscular effects of isometric tests and training (Aagaard, Simonsen, Andersen, Magnusson and Dyhre-poulsen, 2002; Del Balso and Cafarelli, 2006; McMaster, Gill, Cronin, and McGuigan, 2014, McGuigan and Winchester, 2008). Isometric resistance training can lead to increases in maximal contractile torque (Del Balso and Cafarelli, 2006; Pucci, Griffin, Cafarelli, 2006; Rich and Carafelli, 2000). These results have mostly been shown in single joint movements like a knee extension exercise, where the quadricep is being tested for maximal power, strength, and the body is being tested for neurological changes (Del Balso and Cafarelli, 2006; Pucci, Griffin, and Cafarelli, 2006; Rich and Carafelli, 2000).

When training athletes, there is not enough allotted time to specifically train single joint movements. Being able to incorporate isometric holds into multi-joint movements is key. If it has a great effect on a single joint movement, the effect on a multi-joint movement will be just as great, if not greater. Isometric mid-thigh pulls and back squats have been used to test isometric strength and power production (McGuigan and Winchester, 2008; Thomas, Jones, Rothwell, Chiang, and Comfort, 2015; Witt, English, Crowell, Kalogera, Guilliams, Nieschwitz, Hanson, and Ploutz-Snyder, 2016). With that being said, using isometric movements to predict strength has been proven. Witt et al. (2016) found that a single isometric mid-thigh pull repetition correlates

strongly with a deadlift one-repetition max (Witt, English, Crowell, Kalogera, Guilliams, Nieschwitz, Hanson, and Ploutz-Snyder, 2016). Therefore, if being able to predict strength increases from an isometric movement, why not train the isometric movement itself.

Concentric Training

The concentric phase is an action in which the proximal and distal attachments of a muscle move toward one another. It refers to a muscle producing enough force to overcome a load, shortening the length of the muscle (Dietz and Peterson, 2012 p. 111). The true importance of training the concentric phase is the synchronization of all three triphasic phases into a dynamic movement. The concentric phase is the most popular phase of any of the three phases, it is the one most well published, concentric movement is how much one can squat, how fast an athlete can run, and how high an athlete can jump. The goal of the concentric phase is to be reactive, the ability to switch instantly from the eccentric to concentric phase of a dynamic movement (Dietz and Peterson, 2012 p. 120). Being able to be reactive will lead to explosiveness and power.

Concentric muscle actions are the final stage of the true muscle activations and have been proven in studies for years. When strength and conditioning coaches test to see if athletes have strength improvements, they are testing the entire movement, but mainly the concentric movement. Coaches are testing how much an athlete can eccentrically control, isometrically change direction, and concentrically move back to the starting position. Multiple studies have shown significant increases in performance from concentrically used exercises (Adams, O'Shea, O'Shea, Climstein, 1992; Talpey, Young, Saunders, 2016). Adams et al. (1992) shows significant increases in strength over six-

weeks of resistance training, where squats were a focus (Adams, O'Shea, O'Shea, Climstein, 1992).

Cal Dietz believes, as a strength coach, it is not how strong he can make his athletes, it is how can he teach his athletes to generate and produce the most force. He has learned, in order for an athlete to become great at their sport, they must be strong to the extent in which it can benefit them. Every dynamic human movement has a time frame, a limited amount of time in which an athlete has to produce as much force as possible (Dietz and Peterson, 2012 p. 75).

Complex Training

Complex training is various sets of groups/complexes of exercises performed in a manner in which several sets of a heavy resistance exercise are followed by sets of a lighter resistance exercise (Talpey, Young and Saunders, 2016). The most common example seen in the strength and conditioning field is a heavy squat followed by a countermovement jump (Adams, O'Shea, O'Shea, and Climstein, 1992; Talpey, Young, and Saunders, 2016). There has been research stating that complex training does increase vertical jump, which in turn means there was an increase in power production (Adams, O'Shea, O'Shea, and Climstein, 1992; Talpey, Young, and Saunders, 2016). A study done my Mihalik et al. (2008) showed increases in vertical jump height and maximum power with collegiate volleyball players after completing a four-week complex training plan (Mihalik, Libby, Battaglini, and McMurray, 2008; Stasinaki, Gloumis, Spengos, Blazevich, Zaras, Georgiadis, Karampatsos, and Terzis, 2015). Overall, complex training has been proven to increase power production and vertical jump height.

Vertical Jump

Vertical jumping has been described as a complex human movement that requires a high degree of motor coordination between upper and lower body segments. The maximum jump height achieved by an athlete is an indicator of leg muscular power and can provide key information about functional capacity and performance in a variety of sports (Rodriguez-Rosell, Mora-Custodio, Franco-Marquez, Yanez-Garcia, and Gonzalez-Badillo, 2016). The jump height and power output are considered the main indicators of muscle power levels in the lower extremities, especially the maximal instantaneous power or peak power output, considering high correlation of these variables with sports performance (Kons, Ache-Dias, Detanico, Barth, and Dal Pupo, 2017). The reliability of the standardized bilateral vertical jump tests has been widely analyzed in previous studies, which have reported small within-individual variations and a high intraclass correlation coefficient (Acero, Fernandez-del Olmo, Sanchez, Otero, Aguado, and Rodriguez, 2011; Arteaga, Dorado, Chavarren, and Calbet, 2000; Cormack, Newton, McGuigan, and Doyle, 2008).

Not only is vertical jump a strong indicator of lower-extremity power and peak power output, but it a movement that is very relatable to the sport of volleyball. During a typical volleyball match, a men's volleyball athlete will jump around 250 to 300 times (Martinez, 2017). Therefore, for volleyball specifically, testing the vertical jump is very important and plays a key role in the sport itself.

Mid-Thigh Pull

The isometric mid-thigh pull is a time efficient laboratory-based test designed to reliably and accurately assess peak force production and rate of force development across

various time domains (Townsend, Bender, Vantrease, Hudy, Hiet, Williamson, Bechke. Serafini, and Mangine, 2017). To determine the amount of force an athlete produces during athletic movements, the isometric mid-thigh pull offers a valuable peak force output. The values obtained by the isometric mid-thigh pull test have been shown to correlate well with athletic abilities such as vertical jump, agility, and speed (Beckham, Mizuguchi, Carter, Sato, Ramsey, Lamont, Hornsby, Haff, and Stone, 2013; Leary, Statler, Hopkins, Fitzwater, Kesling, Lyon, Phillips, Bryner, Cormie, and Haff, 2012; Mangine, Hoffman, Wang, Gonzalez, Townsend, Wells, Jajtner, Beyer, Boone, and Miramonti, 2016; Townsend, Bender, Vantrease, Hudy, Hiet, Williamson, Bechke. Serafini, and Mangine, 2017).

1-Repetition Max

The one-repetition maximum test is considered the gold standard for assessing muscle strength in non-laboratory situations (Seo, Kim,Fahs, Rossow, Young, Ferguson, Thiebaud, Sherk, Loenneke, Kim, Lee, Choi, Bemben, Bemben, and So, 2011). A one-repetition max is the maximal weight that can be lifted once with the correct technique. Strength and conditioning coaches use the strength tests to evaluate training programs progress across time. Major exercises such as the bench press and squat have been shown to be reliable measurements for one-repetition max testing (Flansbjer and Lexell, 2010; Levinger, Goodman, Hare, Jerums, Toia, and Selig, 2009; McCurdy, Langford, Cline, Doscher, Hoff, 2004; Nevill and Atkinson, 1997; Tagesson and Kvist, 2007).

Best Practices

Strength and conditioning is a field of no rights and no wrongs. There are concepts and ideas that work for some athletes and teams, but not all. However, as the years go on, there are more concepts that are good at improving specific things. For example, when trying to improve movement quality, coaches will use techniques from Gray Cook and other corrective exercise specialists. When trying to improve vertical jump, coaches will use complex training as mentioned above. When trying to improve strength, coaches can use a variety of plans and methods. There is no right or wrong methods to increasing strength and everyone will adapt differently. Some of the major strength programs include using linear and non-linear periodization as a base and following the patterns created throughout the program.

Conclusion

In the field of strength and conditioning, many types of periodization methods and styles have proven to work for multiple individuals. However, everyone is human, and what works for one person does not always work for another. However, as a coach you want to make sure you give your athletes the best possible program to ensure improvements in performance. Understanding the performance needs of a male volleyball athlete narrows down the training methods and exercises that should be used during a training cycle. Communicating with the sport coaches and narrowing down a need for a team is the first step, then making a program that fits the needs of the athletes is provided.

Understanding the concept of triphasic training and the three phases which are important to a successful program that help create more force and power is important. When breaking down the concept of triphasic training and only wanting to accomplish strength gains, using the accumulation phase is important to gain beginning strength.

However, the accumulation phase does not allow for too many explosive movements, so increases in vertical jump may be hindered by not incorporating French contrast or the transmutation, and realization phases. Overall, strength, isometric force, and power can all be a product of the accumulation phase of the triphasic training program. However it has yet to be proven hence the need for greater evidence-based practice research studies.

CHAPTER THREE

METHODOLOGY

Purpose of Study

The purpose of this study was to determine the effects of the eccentric and isometric phases of the triphasic training program on collegiate men's volleyball players 1-RM strength, vertical jump, and isometric force. In addition, the researcher was interested in assessing the maintenance of the triphasic training program after a 5-week take-home transition phase program. The triphasic training program is designed to generate more strength and force production during the off-season period of a men's volleyball program. The 5-week transition phase program is designed to be a take-home program for the collegiate men's volleyball player right before they return for the start of the season (Christmas break). The transition phase program is designed to increase strength, as well as incorporate plyometric components. The triphasic program started on October 16th and the transition phase started immediately after the triphasic program concluded on November 27th.

Research Hypotheses

H1: There will be a positive change in 1-Repetition Max strength for collegiate male volleyball players following the 2 weeks of eccentric and 2 weeks of isometric resistance training.

H2: There will be a positive change in isometric force for collegiate male volleyball players following the 2 weeks of eccentric and 2 weeks of isometric resistance training.

H3: There will be a positive change in vertical jump height for collegiate male volleyball players following the 2 weeks of eccentric and 2 weeks of isometric resistance training.

H4: There will be no significant change in 1-Repetition Max strength for collegiate male volleyball players following a five-week transition phase emphasizing complex training.

H5: There will be no significant change in isometric force for collegiate male volleyball players following a five-week transition phase emphasizing complex training.

H6: There will be no significant change in vertical jump height for collegiate male volleyball players following a five-week transition phase emphasizing complex training.

Research Subjects

Fourteen Division II male collegiate volleyball players volunteered to take part in the study. The volleyball player's average age was 20.21±2 years old. The average height was 190.07±11 cm, the average weight was 189.2±50.8 pounds, and the average reach height was 99.07±7.5 inches. Athletes participating in the study were from a small mid-states University and competed as part of the NCAA Division II program. Training age of athletes ranged from 2 to 8 years with the average being 4.64 years.

Procedures

Testing procedures. On testing day, the athletes arrived to the Lindenwood Fitness Center at the assigned time. The athletes took off their shoes and stepped on a digital scale to record their weight. Secondly, they got their height recorded using a tape measure against a wall, standing with their feet against the wall and their eyes looking forward. The athletes then proceeded to go through a standardized warm-up which is seen in Figure 1. Following the warm-up, the athletes got their reach measured and proceeded to the vertical jump procedure. Once the vertical jump was complete the athletes walked over to the EPNL (Exercise Performance and Nutrition Lab), where they followed the procedures for measuring isometric force. This was completed the session before the training program began and was completed again during the session after the training program ended.

Vertical Jump. Vertical jump was measured using a Vertec. Each participant got their reach measured before the vertical jump. The reach was then measured using a tape measure taped to a wall. Each athlete reached overhead with their dominant arm with their dominant side again the wall. Shoes were kept on during the measurement because they will be jumping with the shoes on. Each athlete received three countermovement jumps in which they were instructed to jump as high as possible and reach as high as possible to touch the sticks. The athlete received thirty seconds between each jump and the highest jump was recorded. An athletes' feet must be completely still before the jump occurs, any false step or pre-hop counted as a no-jump, but did not count against the three jump limit each athlete was allotted.

Isometric Force. Isometric force was measured by a mid-thigh pull using the Loadingstar sensors loading cell to calculate force production. Each athlete was measured for the correct chain height. The chain height was measured so the bar was at the mid-thigh. The mid-thigh was measured using a tape measure and was found to be the middle of a measurement from the ASIS to the Patella. Once the bar was set at midthigh height the athlete stepped onto the platform with both feet on either side of the sensor about hip width apart. Both feet were instructed to face forward. The knees were slightly bent and the shoulders had to be over the knees. The athlete then grabbed the bar with both hands with an overhand grip about shoulder width apart. The tester counted 3,2,1, pull to indicate to the athlete to pull as hard as possible for 3 seconds. The tester had a stopwatch to keep track of the time. Each athlete received three isometric pulls for three seconds in length and received a minute rest in between each set. The cues given to the athlete were

to place the feet hip width apart, rip the paper with the feet, slightly bend the knees, stick the hips back and shoulders over the knees, and pull as hard as possible.

Front Squat 1-Repetition Max. The front squat one-repetition max was performed with certified strength and conditioning specialist determining if the lift meets the criteria set by the NSCA handbook. The front squat was performed with a standard 45 pound Olympic bar and standardized plates measured in pounds. The movement will consist of un-racking the bar and taking two steps back. Feet will be set no wider than shoulder width apart and athlete will sit their hips down until hamstring is parallel to the ground. If the hamstring did not get to parallel to the ground, no rep will be counted. The athletes completed warm-up sets of 5 repetitions and 3 repetitions then continue to do 1 repetition until the athlete could no longer do any more weight.

Trap Bar Deadlift 1-Repetition Max. Trap bar deadlift one repetition max was performed under the supervision of a certified strength and conditioning specialist, who determined if lift meets the criteria of the NSCA handbook. The trap bar deadlift was completed with a standard 45 pound trap bar (hexagon bar) and standard bumper plates measured in pounds. The movement consisted of stepping into the center of the trap bar and setting the feet just wider than hip width apart. The participant then hinged over keeping their back flat to grab the handles. Once the participant was set with good form, the participant stood up with the trap bar so legs were locked out. The athletes completed warm-up sets of 5 and 3 then continue to do 1 repetition until the athlete could no longer do any more weight. The strength and conditioning specialist stopped them if form broke down or the weight moved slowly.

Triphasic Training Program. The triphasic training program lasted six weeks in length and started on October 16th. The program was four days a week with three days being in the weight room and one day being on the volleyball court. The training outline included: day one -- a medium intensity day with an added tempo; day two -- a lateral movement and plyometric day; day three -- a high intensity day with no tempo; and day four -- a high-volume day with an added tempo. The first two weeks included the eccentric phase. The following two weeks included the isometric phase. The last two weeks incorporated the concentric phase. The detailed outline of the triphasic training program is in Figure 2.

Transition Phase. The transition phase program was six weeks in length and started on November 27th. Eight sessions were done with a strength and conditioning coach present and 9 sessions were completed at home during the winter break. The program was a daily undulating program paired with complex training. Therefore, each major movement was paired with a plyometric movement, which was completed immediately after the major movement. The detailed outline of the transition phase is in Figure 2.

Equipment

The equipment used for this study was the weight room equipment in the Fitness Center for the training programs. A loading cell was used to measure isometric force. The Vertec was used to measure vertical jump height. A tape measure to measure reach height and a scale to measure the weight was also used during data collection.

Statistical Treatment of Data

Participant data was entered into SPSS 24.0 (Statistical Package for the Social Sciences) for analysis. Pre-test data was initially entered into the SPSS workbook after

creation of an appropriate codebook. Post-test data and follow-up data was then completed before data analysis was conducted.

The first step in data analysis was to conduct a frequency data analysis that allowed data cleaning. After data cleaning, four participants were removed from consideration for final data analysis due to not completing all steps of the data collection process.

The second step in data analysis was to use a descriptive statistics analysis to calculate mean score distributions. Subsequently, a series of Repeated Measures ANOVA with pairwise comparisons were ran to assess whether differences existed between the three testing times for each of the different assessment variables.

Summary

This was an exploratory study examining the outcomes of participation in a triphasic strength and conditioning program with members of an elite NCAA Division II men's volleyball team. The program of study was implemented during the pre-season and included monitoring of a transition program offered to athletes for the Christmas break between the pre-season and competition season. Athletes completed pre-intervention and post-intervention testing. The hypotheses centered on anticipation of overall strength gains and increases in power after participation in the six-week triphasic program. It was also anticipated that the transition phase over the Christmas break would allow athletes to maintain fitness and strength-power gains in preparation for the competition period beginning in early January. The next section of this paper will present results of the study and qualitative observations made by the lead researcher and head strength and conditioning specialist.

CHAPTER FOUR

RESULTS

Introduction

The following six (6) research hypotheses were utilized in this study:

H1: There will be a positive change in 1-Repetition Max strength for collegiate male volleyball players following the 2 weeks of eccentric and 2 weeks of isometric resistance training.

H2: There will be a positive change in isometric force for collegiate male volleyball players following the 2 weeks of eccentric and 2 weeks of isometric resistance training.

H3: There will be a positive change in vertical jump height for collegiate male volleyball players following the 2 weeks of eccentric and 2 weeks of isometric resistance training.

H4: There will be no significant change in 1-Repetition Max strength for collegiate male volleyball players following a five-week transition phase emphasizing complex training.

H5: There will be no significant change in isometric force for collegiate male volleyball players following a five-week transition phase emphasizing complex training.

H6: There will be no significant change in vertical jump height for collegiate male volleyball players following a five-week transition phase emphasizing complex training.

The next section presents results of the data analysis summarized in tables. Data analysis was conducted using descriptive statistics analysis and paired samples T-Test analysis.

Table 1: Descriptive Statistics for Strength Testing Protocols (N=14)

Scale Scores	1st Test Scores		2nd Test Scores		3rd Test	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Front Squat (Measured in lbs)	243.57	55.14	274.29	41.36	268.57	43.03
Trap Bar (Measured in lbs)	347.14	56.05	383.93	63.65	377.14	56.90
Vertical Jump (Measured in inches)	24.70	1.95	24.39	2.05	23.79	1.87
Mid-Thigh Pull (Measured in Newtons/Meter)	614.29	136.98	644.89	167.52	646.77	146.98

The purpose of the strength and conditioning program was to create positive improvements during the eccentric and isometric phases of off-season resistance training (improvement from 1st test to 2nd test). A secondary purpose of the strength and conditioning program was to maintain strength gains throughout a 5-week pre-season transition period. With the exception of vertical jump, the results shown in Table 1 generally support the expectations set for the strength and conditioning program.

Table 2: Repeated Measures ANOVA with Pairwise Comparisons for Strength Testing Protocols for Participants (N=14).

	F	df	Sig. (2-tailed)
Front Squat (Measured in lbs)	11.213	2, 26	.000***
1st Test & 2nd Test			.001***
1st Test & 3rd Test			.008**
2nd Test & 3rd Test			.263
Trap Bar (Measured in lbs)	21.017	2,26	.000***
1st Test & 2nd Test			.000***
1st Test & 3rd Test			.000***
2nd Test & 3rd Test			.072
Vertical Jump (Measured in inches)	7.016	2,26	.004***
1st Test & 2nd Test			.390
1st Test & 3rd Test			.026*
2nd Test & 3rd Test			.086
Mid-Thigh Pull (Measured in N/m)	4.219	2,26	.026*
1st Test & 2nd Test			.066
1st Test & 3rd Test			.027*
2nd Test & 3rd Test			1.000

*p<.05; **p<.01; ***p<.001

The above table shows the results of the Repeated Measures ANOVA with Pairwise Comparisons analysis for strength testing protocols in pre-test, post test, and 3rd testing period following transition weeks. For front squat, athletes experienced a statistically significant increase in performance (+30.72lbs) following the eccentric and isometric training program. Similarly, athletes performed statistically better in the Trap Bar Test (+36.79lbs) when comparing test period 1 to test period 2. The Mid-Thigh Pull was not significantly greater, but was close. As expected no statistically significant change was found on performance for Front Squat, Trap Bar, and Mid-Thigh Pull between testing period 2 and testing period 3.

Qualitative Results: Strength & Conditioning Specialist Observations

The next section presents field observations made by the lead Strength & Conditioning Coach who was responsible for the program throughout the pre-season, transition, and competition phases of training.

First Testing Week

Testing week was the last week of no volleyball practices and right after a deload week. The athletes were fresh and prepared for the testing week. The tests went well and the amount of weight that was being lifted was more than the previous season. The athletes form, and depth looked good on all the lifts. The "maxes" were also based off technique, if the technique started to break down at any point the athlete was not able to go up in weight. Most of the time, the athlete asked to stop anyway. The first time the athletes performed the isometric mid-thigh pull was the day of the test, however, everyone listened to directions and the technique looked good. Vertical jump tests were a familiar exercise and the athletes really pushed themselves to jump as high as possible and asked to jump more than the allotted amount.

Eccentric Phase

The eccentric phase was not the first time athletes had used a tempo. The athletes were prepped with tempos during the general prep phase of the program. However, the tempos were not as long as the program itself. Having five seconds in lowering the front squat was hard for some athletes. All were able to push past the struggle and succeed with the eccentric program. The majority of the athletes were sore after the tempo day on Monday but recovered in time for the heavy Wednesday lift and were fine for Friday's

tempo day again. The athletes were really sore from Fridays lift, but the added day of recovery helped them recover for the following week.

The program itself flowed well and the athletes were working the entire time. Calling out the tempo was very important for the athletes to make sure everyone was doing the correct amount of time. Additionally, controlling when each set was performed controlled the amount of recovery each athlete was able to receive.

Isometric Phase

The isometric phase of the program was very hard for the athletes. They had been in a full practice and weightlifting schedule for two full weeks. They were putting in a lot of hard work not only in the program, but on the court as well. At this point, there were no major injuries or adjustments. However, bodies were starting to get a little fatigued. The program itself looked good and the athletes completed the tasks well with no problems. Holding the bottom of each position for three seconds was difficult for most, but at this point the athletes could see testing day and were pushing to that day. Again, calling out the tempos and controlling the rest times played a key in the program. Being able to read the athletes and tell when they were able to complete the next set played a big role.

Second Testing Week

By the second testing week, the athletes were excited to get the tests over with knowing they were able to have a few days off for the Thanksgiving holiday. The athletes pushed themselves to the max and competed well. The attitudes of the athletes were great and they all wanted to push themselves to go longer. Having to hold some of them back due to technique was difficult but staying consistent for the athletes was important. The

vertical jump testing provided a potential extraneous factor. Having stayed the same from pre- to mid with a lot of jumping on the court and in practice surprised most of them. Looking at the time of the first test to the time of the second test plays a factor in the results. The first test took place in the afternoon and the second test took place in the early morning. Some athletes were fatigued from practice and others probably didn't care how they performed. The isometric mid-thigh pull results were good and the technique looked good.

Transition Phase

Being able to start the transition phase with the athletes was the most important part of the phase. Being able to walk the athletes through the workout two times was very helpful because the Strength & Conditioning Specialist knew they understood how to execute the workout. By this phase, a lot of the athletes were very fatigued because not only was the strength and conditioning program difficult, but the coaching staff was holding hard practices five days a week with sometimes a tournament on the weekend. This phase dropped the amount of volume but added more of a conditioning component if completed correctly. The load was just right and the accessory work was enough to get them prepped for the start of the season.

Two to three athletes openly admitted to not having a gym to complete the workouts during Christmas break. One athlete admitted to not having enough weight in the garage gym to complete the right amount of work. The other athletes said they did not have a problem completing the workouts prescribed over the break.

Third Testing Week

This week was not ideal for a strength and conditioning coach trying to complete testing. The athletes reported back December 30th and had two three-hour practices a day before the first lift on January 1st. The athletes were really sore and the last thing they wanted to do was jump. They were prepared to jump because they understood the testing process, but the bodies were sore. Again, this testing was completed at a separate time, but the athletes gave it their full effort from what energy they had left. Surprisingly, most of the front squats, and trap bar deadlifts, stayed the same and a few even increased. Some decreased and those athletes were the athletes that were unable to complete transition phase at home. The isometric mid-thigh pull technique looked good, however, the athletes did complain about low back pain during this time, but still completed all three trials.

CHAPTER FIVE

DISCUSSION

Introduction

The purpose of this study was to determine the effects of the eccentric and isometric phases of the triphasic training program on collegiate men's volleyball players 1-RM strength, vertical jump, and isometric force. Furthermore, the researcher wanted to assess the effects of maintenance of the triphasic training program after a 5-week take-home transition phase program. The triphasic training program was designed to generate more strength and force production during the off-season period of a men's volleyball program. The 5-week transition phase program was designed to be a take-home program for the collegiate men's volleyball player right before they return for the start of the season. The transition phase program was designed to increase strength, as well as incorporate plyometric components. The following sections will present significant findings and interpretation of the results of the study. Limitations, practical implications, and suggestions for future research will be presented.

Summary of Important Findings

In this section, each of the following research hypotheses will be discussed and important findings supporting or rejecting the hypotheses will be presented.

H1: There will be a positive change in 1-Repetition Max strength for collegiate male volleyball players following the 2 weeks of eccentric and 2 weeks of isometric resistance training.

There was a significant increase in 1-Repetition Max strength following the 2 weeks of eccentric and 2 weeks of isometric resistance training program. There was a significant increase ($p=.001$) in front squat strength with an overall average increase of

30.72 pounds. There was also a significant increase (p=.000) in the trap bar deadlift with an overall average increase of 36.79 pounds. The significant increases in strength could be attributed to the amount of repetitions done with no less than 80% of the athletes true 1-Repetition Max. As well as, the amount of overload placed on the body by the added tempo on day one and day three. These strength increases show that completing two weeks of eccentric and isometric movements at percentages above 80% resulted in a significant increases in strength.

H2: There will be a positive change in isometric force for collegiate male volleyball players following the 2 weeks of eccentric and 2 weeks of isometric resistance training.

After the 2 week eccentric and 2 week isometric resistance training program, the results showed no significance (p=.066) in isometric force production. Through the isometric mid-thigh pull there was an average increase of 30.6 Newton/Meters from the training program. This increase can be contributed to heavy trap bar deadlifts that were completed in the program, as well as, the overload from eccentric and isometric movements. The deadlifts help athletes learn how to push the floor away from them, which is the same concept as the isometric mid-thigh pull.

H3: There will be a positive change in vertical jump height for collegiate male volleyball players following the 2 weeks of eccentric and 2 weeks of isometric resistance training.

The vertical jump showed no significant increase or decrease after the two weeks of eccentric and two weeks of isometric training programs. The vertical jump actually decreased .31 inches during the training program. The vertical jump did not see any increases due to no true explosive movements being paired with the heavy resistance training. Athletes got in a lot of plyometric work on a separate day and in practice each day. However, the athletes not receiving the potentiation effect affected the results of the

vertical jump. Cal Dietz completes French Contrast during this training block to help with the potentiation effect (Dietz and Peterson, 2012). The decrease in vertical jump can be attributed to the inconsistent schedule of the testing and the amount of jumping in practice the day before testing day.

H4: There will be no significant change in 1-Repetition Max strength for collegiate male volleyball players following a five-week transition phase emphasizing complex training.

There was no significant decrease in 1-Repetition Max strength from the five-week transition phase. There was no significant decrease or increase in the front squat ($p=.263$) or the trap bar deadlift ($p=.072$). The front squat overall average decreased 5.72 pounds and the trap bar deadlift decreased an overall average of 6.79 pounds. The transition phase was designed to help maintain the strength built from the eccentric and isometric program. Therefore, increases in 1-Repetition Max was not expected during this phase as percentages and overload was not as great. Minimizing the amount of decrease in strength over a holiday break was the goal as the season fast approached. The slight decreases showed strength was overall maintained during the transition phase.

H5: There will be no significant change in isometric force for collegiate male volleyball players following a five-week transition phase emphasizing complex training.

After completing, the five-week transition phase program there was no significant change ($p=.901$) in isometric force using the mid-thigh pull. However, there was a non-significant increase of 1.88 Newton/Meters after the five-week transition phase. The isometric force had no significant increase, but increases over the transition period and can be attributed to the added potentiation seen after the main movement. The vertical jump after the front squat helped athletes learn how to put force into the ground.

H6: There will be no significant change in vertical jump height for collegiate male volleyball players following a five-week transition phase emphasizing complex training.

The five-week transition phase showed a significant decrease (p=.029) in vertical jump height of about .6 inches. The vertical jump decreased due to the amount of jumping athletes did prior to the third testing period. Athletes completed 12 plus hours of practice prior to the last test and had a practice after the testing session was completed. The result could have been different if the test was completed prior to the pre-season practices starting. However, with the added vertical jumps in the program, the vertical jump might have fatigued the athletes.

Limitations

When working with collegiate teams there are many limitations. Completing research on collegiate teams, there are even more limitations than just being a strength and conditioning coach for that team. In this study, there were many limitations. The hardest limitation to control was scheduling. Strength and conditioning coaches are reliant on the head coach to allow them an allotted amount of time with their team. Coaches can only work with athletes for so many hours a week and strength and conditioning coaches use that time, so during the season, strength and conditioning time gets cut due to added practice times. Therefore, some of the limitations on this study included the amount of time the athletes were training, and the times at which they were training. For example, the first vertical jump and front squat test was completed at two in the afternoon, whereas the second test was completed at seven in the morning, and the third test was completed at five in the evening. Having the times not be consistent is not ideal but is the reality of collegiate athletics. The dates at which they were completed was

also a limitation. The first test was done on a Monday during Fall Break, the second test was done on the Monday of Thanksgiving week when most athletes left Tuesday, and the third test was done on New Year's Day. Now this is common for athletes, but still considered a limitation from a the aspect of the athletes focus.

Besides scheduling, the timing at which the athletes were able to come in was a limiting factor. As previously stated, coming in at different times for each test is not ideal, but also some tests were before practice, where others were after practice. For example, the third test was completed after three days of two-practices a day right before another practice. The athlete's mind and body were fatigued not ready to perform max effort tests.

Athletes afford multiple limitations to the study, whether it be effort given, listening skills, or technique, strength and conditioning coaches do not know what they will have to deal with and coach. One question strength and conditioning coaches ask is how much effort will each athlete give to get better in the weight room? The reality is the athlete was not recruited to train in the weight room. Athletes play on the court or field, so some athletes do not care about the effort given in the weight room. There was a small limitation here, most athletes bought into the training program and improved, whereas others did not.

The athletes tried their best to follow the instructions given by the tester. However, athletes still participated in other activities besides practice and the strength and conditioning program given to them. Not every athlete in the study completed the take-home transition period due to no gym membership, not enough weights in the home gym, or choosing to not workout over the Christmas break.

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Technique was a limiting factor in the exercise selection chosen for this study. Keeping the exercise selection simple was important for a successful study. Technique during the test was a limiting factor to how much weight they were able to complete. If the technique was not perfect they were unable to add weight to the bar. This played a factor during the first test for individuals with a young training age but did not play a factor for any tests after.

Equipment in the University Fitness Center also played a limiting factor in the exercise selection for this study. Having a limited amount of space, racks, and available equipment challenged the process of the program. The program written is specifically written to fit the Fitness Center at the University and the time-periods the men's volleyball team was lifting.

Practical Implications

This study utilized two different strength and conditioning program styles. The program consisted of two phases (eccentric and isometric) of the accumulation phase of the triphasic training program, as well as, a five-week transition take-home program for a collegiate men's volleyball program. The program was conducted during the team's fall practice block (non-competitive season) and Christmas break (volleyball's preseason). The program was designed to show the benefits of the eccentric and isometric training blocks of the accumulation phase of the triphasic training program designed by Cal Dietz (Dietz and Peterson, 2012). Also, to see the transfer effects the strength gains have after a five-week transition preseason training program designed to be completed at a home or commercial gym.

The program used collegiate male volleyball players to complete a twelve-week training program (including three testing weeks) leading into the competitive season. The program used compound exercises with a complex training method to see improvements in overall strength and power. The triphasic training program written by Cal Dietz does not have any scientific research to back the program other than the two books written by himself and two other co-authors. Completing a study which uses this program to see the results reported in the book is important for the field of strength and conditioning. Strength and conditioning coaches around the world use the method of triphasic training with athletes of every sport and have reported self-success on training blogs and social media posts, but there has not been one scientific study completed.

Even though this study is not a true triphasic program from the book, the components of the accumulation phase of the triphasic program plays a key factor in the overall results of the program itself. The results of the study demonstrated strength and force improvements over a two-week eccentric and two-week isometric daily undulating resistance training program in collegiate male volleyball players. Therefore, when trying to improve a team's strength in a four-week period the accumulation phase with eccentric and isometric training will help improve strength significantly. However, if trying to improve a team's power output and vertical jump height, this program will not be of significance.

Suggestions for Future Research

Future research in triphasic training will be significant for the field of strength and conditioning. A program which is so well known but does not have any scientific research to prove its benefits is remarkable. Being able to complete research on the entire

triphasic training program with a collegiate team would be interesting to look at the physiological changes that could take place. Taking this study one step further would be completing the true accumulation phase of triphasic training, which would be the eccentric, isometric, and concentric phases. Adding the concept of French Contrast, which Cal Dietz does suggest you using during this phase, and seeing how those compare and the differences in power output in athletes. Only completing the transmutation or the realization phase would be interesting to see if there are any strength increases in those phases. Being able to skip the accumulation phase would be possible to see power increases or even strength increases.

From a volleyball perspective, what is the best program to help make a volleyball player? Finding the tools to create a great volleyball athlete is the first step, but from a training perspective, what training styles help prevent injuries? With the popularity of collegiate men's volleyball in the United States not being very great, research from these athletes is mostly completed overseas and has answered a few of these questions previously stated. However, the style of competition is very different due to player personnel, so training styles vary.

Conclusion

In conclusion, this study provides research for the use of not only the effects of the eccentric and isometric phases of triphasic training on strength and power, but also how to effectively train a male collegiate volleyball athlete. This study found significant increases in front squat and trap bar deadlift one-repetition max tests following two-weeks of eccentric and two-weeks of isometric daily undulating resistance training. Also, there was no significant changes in the tests after a five-week transition phase done

during break. However, there was no significant change in vertical jump throughout the study. The eccentric and isometric phases of the accumulation phase of the triphasic training program play a key role in strength and force increases. Triphasic training has the ability to help athletes succeed at their sport.

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APPENDICES

Appendix A: Institutional Review Board (IRB) Approval

Appendix B: Training Program

Appendix C: Chalk Talks

LINDENWOOD

LINDENWOOD UNIVERSITY ST. CHARLES, MISSOURI

DATE:	October 27, 2017
TO:	Grant Kastelan
FROM:	Lindenwood University Institutional Review Board
STUDY TITLE:	[1139961-1] The Effects of Triphasic Training on Isometric Force and Power for Collegiate Male Volleyball Players
IRB REFERENCE #:	
SUBMISSION TYPE:	New Project
ACTION:	APPROVED
APPROVAL DATE:	October 27, 2017
EXPIRATION DATE:	October 26, 2018
REVIEW TYPE:	Expedited Review

Thank you for your submission of New Project materials for this research project. Lindenwood University Institutional Review Board has APPROVED your submission. This approval is based on an appropriate risk/benefit ratio and a study design wherein the risks have been minimized. All research must be conducted in accordance with this approved submission.

This submission has received Expedited Review (Cat. 4) based on the applicable federal regulation.

Please remember that informed consent is a process beginning with a description of the study and insurance of participant understanding followed by a signed consent form. Informed consent must continue throughout the study via a dialogue between the researcher and research participant. Federal regulations require each participant receive a copy of the signed consent document.

Please note that any revision to previously approved materials must be approved by this office prior to initiation. Please use the appropriate revision forms for this procedure.

All SERIOUS and UNEXPECTED adverse events must be reported to this office. Please use the appropriate adverse event forms for this procedure. All FDA and sponsor reporting requirements should also be followed.

All NON-COMPLIANCE issues or COMPLAINTS regarding this project must be reported promptly to the IRB.

This project has been determined to be a Minimal Risk project. Based on the risks, this project requires continuing review by this committee on an annual basis. Please use the completion/amendment form for this procedure. Your documentation for continuing review must be received with sufficient time for review and continued approval before the expiration date of October 26, 2018.

Please note that all research records must be retained for a minimum of three years.

APPENDIX B

LINDENWOOD
2017-2018 LINDENWOOD VOLLEYBALL
LINDENWOOD
Season
Goal
Month
Date
Monday
Tuesday
Wednesday
Thursday
Friday
Saturday
Sunday
Week
Season Count
Important Dates
Testing
Off-Season
Test
Eccentric
Isometric
Test
Pre-Season
Transition
October
November
December
October 23rd
October 30th
November 6th
November 13th
November 20th
November 27th
December 4th
December 11th
December 18th
December 25th

Movements						
Day 1	10/16/2017	10/30-11/10	11/13-11/24	11/27/2017	12/4-12/11	12/25-1/12
Warm-up	Inverted Ham x3ea Runners Lunge x3ea Downdog x3 Lateral Lunge x3ea					
Hip Mobility	Quadruped Rockbacks x5:05 SL Rockbacks x5:05 Hip Flexor x5:05 Pigeons x5:05 Figure-4 x5:05					
Activations	Banded Squats x10 Banded Push to Base x10ea No Money's x10 Plank Shoulder Taps x10ea					
Ankle Stabilization	MB Reaching RDL to toss FWD/Lateral x3ea				MB FWD Reaching RDL's 2x5ea	
A	**Height Weight Vertical Jump**	Front Squat 4x3 @ 82/85% 5RX Dead Bug Opp A&L 4x5ea HK Landmine Press 4x3 5RX	Front Squat 4x3 @ 82/85% X3X Dead Bug Opp A&L 4x5ea HK Landmine Press 4x3 X3X	**Weight Vertical Jump**	Front Squat 10x2 on the min @80% Vertical Jump 10x1	Front Squat 10x1 on the min @85% Vertical Jump 10x1
B	**Front Squat**	SL Butt to Bench 3x5 5RX SG Reiser Low Row 3x8 3RX BU KB Carry 3x4 Pillars	SL Butt to Bench 3x5 X3X SG Reiser Low Row 3x8 X3X BU KB Carry 3x4 Pillars	**Front Squat**	SS Landmine Press 4x5 Plank Circles 4x5ea AP DB Row 4x5ea	SS Landmine Press 4x5 Plank Circles to Reach 4x5ea AP DB Row 4x5ea
Day 2		10/30-11/10	11/13-11/24	11/27/2017	12/4-12/11	12/25-1/12
LAX Ball	Glutes Adductors Hamstring Calves					
Mobility/Activations	90/90 Leg Extensions x8ea Side Lying Quad x8ea Couch Hip Lift x8ea Glute Bridge Marches x8ea					
Mini Band	Push to return to base x10ea Push to Base x10ea Accelerations x10ea					
Dynamic	Leg Cradles Knee Hug to Opp Shoulder Slides Calisota Lateral Marches Lateral Skips Drop to Plank Side to Sides to sprint					
Jump Landings	Drop Landings x5 SL Drop Landings x5ea Drop Landings to Jump x5 Drop Landings to Jump to Lateral Jump x5ea					
Hurdles	2 Hurdle w/ stick x3 2 hurdle w/o stick x3 SL w/o stick x3ea	2 Hurdle w/o stick x3 2 hurdle lateral w/ stick x3 SL w/o stick x3ea	2 Hurdle w/o stick x3 2 hurdle lateral w/o stick x3 SL w/o stick lateral x3ea			
Bands	Lateral Push to Base x20 feet Res/Ass Push to base x2 2/5ea Broad Jump 2x5	Lateral Push to Base x20 feet Res/Ass Push to base x2 4/5ea V1 to Broad Jump 2x5	Lateral Push to Base x20 feet Res/Ass Push to base x2 2/5ea V1 to Broad Jump 2x5			
Conditioning	Lunge 105%	110%	115%			
Day 3	10/23/2017	10/30-11/10	11/13-11/24	11/27/2017	12/4-12/11	12/25-1/12
Warm-up	Inverted Ham x3ea Runners Lunge x3ea Downdog x3 Lateral Lunge x3ea					
Hurdle Mobility	Over Forward x2 Over Backwards x2 Over Side to Side x2ea Under Side to Side x2ea					
Activations	3-way Glute Bridge x8ea Floor Angels x10 Prone Heel Squeezes x8 Quadruped FWD/BWD Crawling x10ea					
Ankle Stabilization	3-Way Cone Touches w/ Hand x1ea				3-Way Cone Touches w/ Feet x1ea	
A	**Isometric pull Trap Bar**	Position 2 Clean 5x1 Plank Reaches 4x5ea Bretzel 4x5ea	Position 2 Clean 5x1 Plank Reaches 4x5ea Bretzel 4x5ea	**Isometric pull Trap Bar**	A. Squat Jumps 5x2 @40% of Front Squat B1. Trap Bar 5x1 @ 90% on the Min B2. Broad Jumps 3x1	A. Squat Jumps 5x1 @40% of Front Squat B1. Barbell RDL 5x3 on the Min B2. Broad Jumps 3x1
B		Trap Bar Deadlift 5x1 @ 90/92% DB Pendlay Row 4x2 Plate Plank Pulls 4x5ea	Trap Bar Deadlift 5x1 @95/97% DB Pendlay Row 4x2 Plate Plank Pulls 4x5ea		Pull-ups 4xHalf of Max Inverted Row 4x10 Pushup to Reach 3x10	Pull-ups 4xHalf of Max x2 Inverted Row 4x8 Pushup to Reach 3x10
Day 4		10/30-11/10	11/13-11/24	11/27/2017	12/4-12/11	12/25-1/12
Warm-up	Inverted Ham x3ea Runners Lunge x3ea Downdog x3 Lateral Lunge x3ea					
Hip Mobility	Quadruped Rockbacks x5:05 SL Rockbacks x5:05 Hip Flexor x5:05 Pigeon x5:05 Figure-4 x5:05					
Activations	Banded Squats X10 Banded Push to Base x10ea No Money's x10 Plank Shoulder Taps x10ea					
Ankle Stabilization	MB Reaching RDL to toss FWD/Lateral x3ea				MB Reaching RDL FWD x8ea	
A	**Off**	Safety Bar Split Squat 4x5ea 5RX Hip Airplane 4x5ea Weighted Pull-up 4x5 5RX	Safety Bar Split Squat 4x5ea X3X Hip Airplane 4x5ea Weighted Pull-up 4x5 X3X	**Off**	Walking Lunges 5x8ea SL Vertical Jump 4x2ea Lat Pulldown 5x8	Walking Lunges 4x8ea SL Vertical Jump 4x5ea Lat Pulldown 6x8
B		DB RDL 3x8 3RX Weighted Pushup 3x8 3RX TRX Row 3x8 5RX	DB RDL 3x8 X3X Weighted Pushup 3x8 X3X TRX Row 3x8 X3X		DB Bench 4x5 YTW w/ 5lbs 4x6ea Dead Bug Same A&L 4x5ea	DB Bench 4x3 YTW w/ 5lbs 4x6ea Dead Bug Same A&L 4x5ea

APPENDIX C

Triphasic Chalk Talks

Session 1

Warm-up

Inverted Ham to Knee Hug - x3 ea. Stand on left leg, reach right leg back into a single leg RDL and stand tall and hug the right leg

Runners Lunge w/ Turn x3 ea. Hand overhead, step out with right leg into a lunge position with back leg straight.Place the left hand on the ground and reach the right hand to the sky with the eyes looking at the hand

Downdog - x3 Touch your toes, walk your hands out into a push-up position, then push your hips up to the sky and walk the hands back. Then pedal each heel to the ground by bending each knee. Stand up tall by walking feet to the hands

Lateral Lunge One-Way Ham - 3x ea. Step-out with the right leg into a lateral lunge, sitting down into the right leg, stand-up into a position where the feet are still out to the side. Then do an RDL reaching the hands out in front of the body.

Hip Mobility

Quadruped Rockbacks -x5:05 On hands and knees, rock back onto the heels. On the 5th one hold for 5 seconds

SL Rockbacks - x5:05 ea. Reach right leg out to the side with the foot flat on the ground and the toes facing forward. Keeping the back flat sit back onto the feel 5 time and hold for 5 seconds.

Hip Flexors - x5:05 ea. Right leg up at 90/90 with the left knee on the ground. Squeeze the left glute 5 times and hold for 5 seconds.

Pigeon - x5:05 ea. Right leg in front for pigeon position with the left leg straight. Rock the hips to the ground to the right 5 time and hold for 5 sec

Figure-4 - x5:05 ea. Right foot on left knee. Bring the left foot off the ground and rock to the left side 5 times keeping the shoulders on the ground. On last rep hold for 5 seconds.

Activations

Banded Squats - x10 Place mini-bands on above the knees. Place feet shoulder width apart if not slightly wider. Squat down keeping chest up and keep the kr

Banded Push to base - x10ea. Place mini-band above the knees. Quarters squat so shoulders are over the knees and hips are back. Push the left leg completely straight and slightly step with the right leg. Then return to the starting position.

No Money's - x10 Stand with resistance band in both hands with palms facing up. Bend both elbows so they are by the ribcage and the hands are out in front of the body. Keeping the elbows in move the hands out to the side as far as possible and return to the starting position.

Plank Shoulder Taps - x10ea Start in push-up position w/ feet out wide. Lift right hand up and touch left shoulder and return to starting position. Do not move the hips at all. Keep the core tight.

Weight
Height
Vertical Jump

Lift

Front Squats -5,3,1,1 rep until form breaks and max is form.

Triphasic Chalk Talks

Session 2

Warm-up

Inverted Ham to Knee Hug - x3 ea. Stand on left leg, reach right leg back into a single leg RDL and stand tall and hug the right leg

Runners Lunge w/ Turn x3 ea. Hand overhead, step out with right leg into a lunge position with back leg straight.Place the left hand on the ground and reach the right hand to the sky with the eyes looking at the hand

Downdog - x3 Touch your toes, walk your hands out into a push-up position, then push your hips up to the sky and walk the hands back. Then pedal each heel to the ground by bending each knee. Stand up tall by walking feet to the hands

Lateral Lunge One-Way Ham - 3x ea. Step-out with the right leg into a lateral lunge, sitting down into the right leg, stand-up into a position where the feet are still out to the side. Then do an RDL reaching the hands out in front of the body.

Hurdle Mobility

Over FWD/BWD - 2xea. Hands behing your head. Step over the hurdle bringing your knee up to your chest and then straight down if possible. Go forward for 2 alternating legs. Then go backwards for 2 alternating legs. Reset both feet before steping over the next hurdle

Over Side to Side - x1ea. Hands behing your head. Step over the hurdle bringing your knee up to your chest and then straight down if possible. Lead with the r

Under Side to side - x2ea. Hands behind your head. Squat down and step through with the lead leg. Once completely under the hurdle, stand up and repeat through the hurdles.

Activations

3 way Glute Bridges - x8ea. Lay on back with legs straight. Hands up to the sky with palms facing each other. Press up through the heels to raise hips off the ground. Then move feet halfway in and complete the same thing. Lastly, bring feet all the way back to the hips and complete 8 reps at each position.

Floor Angels - x8 Lay on back with knees bent and arms in a scarecrow position. Bring the hands up as high as possible keeping the forearms on the ground the entire time. Bring elbows down as far as possible.

Prone Heel Squeezes - x8 Lay on stomach with knees outside the shoulders and the heels touching each other. Squeeze the heels together as hard as possible, then relax.

Quadruped Hand Lifts - 2x5ea. On hands and knees, keeping the back flat the entire time, raise the knees up off the ground. On coaches call lift the right then the left hand up, keeping the back flat the entire time.

Isometric Pull

Lift

Trap Bar - 5,3,1,1 rep until a max. Keep good form the entire time. Once form breaks a max will be found

Triphasic Chalk Talks

Session 3

Warm-up

Inverted Ham to Knee Hug - x3 ea. Stand on left leg, reach right leg back into a single leg RDL and stand tall and hug the right leg

Runners Lunge w/ Turn x3 ea. Hand overhead, step out with right leg into a lunge position with back leg straight.Place the left hand on the ground and reach the right hand to the sky with the eyes looking at the hand

Downdog - x3 Touch your toes, walk your hands out into a push-up position, then push your hips up to the sky and walk the hands back. Then pedal each heel to the ground by bending each knee. Stand up tall by walking feet to the hands

Lateral Lunge One-Way Ham - 3x ea. Step-out with the right leg into a lateral lunge, sitting down into the right leg, stand-up into a position where the feet are still out to the side. Then do an RDL reaching the hands out in front of the body.

Hip Mobility

Quadruped Rockbacks -x5:05 On hands and knees, rock back onto the heels. On the 5th one hold for 5 seconds

SL Rockbacks - x5:05 ea. Reach right leg out to the side with the foot flat on the ground and the toes facing forward. Keeping the back flat sit back onto the feel 5 time and hold for 5 seconds.

Hip Flexors - x5:05 ea. Right leg up at 90/90 with the left knee on the ground. Squeeze the left glute 5 times and hold for 5 seconds.

Pigeon - x5:05 ea. Right leg in front for pigeon position with the left leg straight. Rock the hips to the ground to the right 5 time and hold for 5 sec

Figure-4 - x5:05 ea. Right foot on left knee. Bring the left foot off the ground and rock to the left side 5 times keeping the shoulders on the ground. On last rep hold for 5 seconds.

Activations

Banded Squats - x10 Place mini-bands on above the knees. Place feet shoulder width apart if not slightly wider. Squat down keeping chest up and keep the kn

Banded Push to base - x10ea. Place mini-band above the knees. Quarters squat so shoulders are over the knees and hips are back. Push the left leg completely straight and slightly step with the right leg. Then return to the starting position.

No Money's - x10 Stand with resistance band in both hands with palms facing up. Bend both elbows so they are by the ribcage and the hands are out in front of the body. Keeping the elbows in move the hands out to the side as far as possible and return to the starting position.

Plank Shoulder Taps - x10ea Start in push-up position w/ feet out wide. Lift right hand up and touch left shoulder and return to starting position. Do not move the hips at all. Keep the core tight.

Ankle Stability

MB Reach to Toss - x3ea. Stand on one leg. Reach the MB out in front while doing a inverted ham. Stand up tall and throw it to your partner or the wall. Staying on one foot the entire time. Catch the ball and repeat. Then switch legs. Then stand on the right leg to the side of the partner. Repeat, but throw the ball off to the side. Then switch still on the right foot. Finally, switch legs.

Lift

Front Squats - 4x3 (5XX) 82% 5 seconds on the way down no pause stand up Elbows up, sit down into a squat position and then stand up tall as fast as possibl

Dead Bug opp arm and leg - 4x5ea. Lay on back with knees @ 90° and hand up to the sky. Move the right leg straight and the left arm overhead. Pause for a second then return to the starting position.

HK Landmine Press - 4x3ea. (5XX) Start in a half kneeling position with right knee down. The bar will be in the right hand with the elbow in and the bar at shoulder height, press the bar up at a 45°. Bring the bar back to the starting position keeping the elbow in the entire time. 5 seconds on the way down, two hand to press back up.

SL Butt to Bench - 3x5ea.(3XX) Stand on right leg about 1 step away from the bench. Sit the hips back and reach for the bench. Take 3 seconds on the way down. Sit down on the bench for a second then stand up.

Softball Keiser Row - 3x8 (3XX) Grab the softball with both hands. Hinge at the waste with shoulders over the knees. Extend the arms then row the softballs to the chest keeping the elbows by your side. When extending straight count to 3.

KB Bottoms-up Walks 4x3 Pillars ea. Hold a kettlebell in the right hand with the elbow at shoulder height and in a 90° angle with the bottom of the kettlebell facing the sky. Walk 3 pillars and switch hands.

Triphasic Chalk Talks

Session 5

Warm-up

Inverted Ham to Knee Hug - x3 ea. Stand on left leg, reach right leg back into a single leg RDL and stand tall and hug the right leg

Runners Lunge w/ Turn x3 ea. Hand overhead, step out with right leg into a lunge position with back leg straight.Place the left hand on the ground and reach the right hand to the sky with the eyes looking at the hand

Downdog - x3 Touch your toes, walk your hands out into a push-up position, then push your hips up to the sky and walk the hands back. Then pedal each heel to the ground by bending each knee. Stand up tall by walking feet to the hands

Lateral Lunge One-Way Ham - 3x ea. Step-out with the right leg into a lateral lunge, sitting down into the right leg, stand-up into a position where the feet are still out to the side. Then do an RDL reaching the hands out in front of the body.

Hurdle Mobility

Over FWD/BWD - 2xea. Hands behing your head. Step over the hurdle bringing your knee up to your chest and then straight down if possible. Go forward for 2 alternating legs. Then go backwards for 2 alternating legs. Reset both feet before steping over the next hurdle

Over Side to Side - x1ea. Hands behing your head. Step over the hurdle bringing your knee up to your chest and then straight down if possible. Lead with the r

Under Side to side - x2ea. Hands behind your head. Squat down and step through with the lead leg. Once completely under the hurdle, stand up and repeat through the hurdles.

Activations

3 way Glute Bridges - x8ea. Lay on back with legs straight. Hands up to the sky with palms facing each other. Press up through the heels to raise hips off the ground. Then move feet halfway in and complete the same thing. Lastly, bring feet all the way back to the hips and complete 8 reps at each position.

Floor Angels - x8 Lay on back with knees bent and arms in a scarecrow position. Bring the hands up as high as possible keeping the forearms on the ground the entire time. Bring elbows down as far as possible.

Prone Heel Squeezes - x8 Lay on stomach with knees outside the shoulders and the heels touching each other. Squeeze the heels together as hard as possible, then relax.

Quadruped Hand Lifts - 2x5ea. On hands and knees, keeping the back flat the entire time, raise the knees up off the ground. On coaches call lift the right then the left hand up, keeping the back flat the entire time.

Ankle Stability

3 way cone touch w/ foot - 3 cones will be in a triangle shape. The athlete will stand in the middle of the triangle. The athlete will reach the right foot to the front cone and tap the toe on the ground as close to the cone as possible. Then the right foot out to the right side back at an angle and tap as close to the cone as possible. Lastly, the athlete will reach back behind to the cone to the left and lightly touch the ground and come back up. Repeat 2 times w/ each foot.

Lift

Position 2 Clean - 5x1 Velocity Bring the bar down just above the hip and extend the hips to the bar. Catch the bar in the front rack position in a quarter squat. Hold for a second and stand-up tall.

Plank Reaches -4x5ea Start in push-up position w/ feet out wide. Lift right hand up to the sky with thumb up, return to starting position. Do not move the hips at all. Keep the core tight.

Bretzel - 4x3ea. Lay on your right side. Bring the right leg back so the left hand is on the right foot. The left knee is at a 90° angle and the right hand in on the left knee. Keep the left knee on the ground the entire time. Rock over to the left side trying to place both shoulders on the ground. take your head and eyes with you.

Trap Bar - 5x1 90% Keep back flat, eyes forward. Shoulders over your knees and stand-up tall. Lower the trap bar and repeat.

DB Pendlay Row - 4x2ea. Stand in an athletoic position with right hand on a bench. Slightly bend the knees and flatten the back by pressing into the heels and the butt back. With the dumbbell in the left hand row the dumbbell to the chest. When pulling up on the dumbbell keep the back flat and tha elbow by the ribcage the entire time. Do not control the dumbbell on the way down. let it comeback to the ground slightly open and repeat.

Plate band pulls - 4x8 In the rkc plank position with feet wide, reach out and grab the 10 pound plate. Pull it on the ground with a band around it and the rack to the shoulder and slowly return it back to starting position. Repeat using the other arm.

Triphasic Chalk Talks

Session 6

Warm-up

Inverted Ham to Knee Hug - x3 ea. Stand on left leg, reach right leg back into a single leg RDL and stand tall and hug the right leg

Runners Lunge w/ Turn x3 ea. Hand overhead, step out with right leg into a lunge position with back leg straight.Place the left hand on the ground and reach the right hand to the sky with the eyes looking at the hand

Downdog - x3 Touch your toes, walk your hands out into a push-up position, then push your hips up to the sky and walk the hands back. Then pedal each heel to the ground by bending each knee. Stand up tall by walking feet to the hands

Lateral Lunge One-Way Ham - 3x ea. Step-out with the right leg into a lateral lunge, sitting down into the right leg, stand-up into a position where the feet are still out to the side. Then do an RDL reaching the hands out in front of the body.

Hip Mobility

Quadruped Rockbacks -x5:05 On hands and knees, rock back onto the heels. On the 5th one hold for 5 seconds

SL Rockbacks - x5:05 ea. Reach right leg out to the side with the foot flat on the ground and the toes facing forward. Keeping the back flat sit back onto the feel 5 time and hold for 5 seconds.

Hip Flexors - x5:05 ea. Right leg up at 90/90 with the left knee on the ground. Squeeze the left glute 5 times and hold for 5 seconds.

Pigeon - x5:05 ea. Right leg in front for pigeon position with the left leg straight. Rock the hips to the ground to the right 5 time and hold for 5 sec

Figure-4 - x5:05 ea. Right foot on left knee. Bring the left foot off the ground and rock to the left side 5 times keeping the shoulders on the ground. On last rep hold for 5 seconds.

Activations

Banded Squats - x10 Place mini-bands on above the knees. Place feet shoulder width apart if not slightly wider. Squat down keeping chest up and keep the kn

Banded Push to base - x10ea. Place mini-band above the knees. Quarters squat so shoulders are over the knees and hips are back. Push the left leg completely straight and slightly step with the right leg. Then return to the starting position.

No Money's - x10 Stand with resistance band in both hands with palms facing up. Bend both elbows so they are by the ribcage and the hands are out in front of the body. Keeping the elbows in move the hands out to the side as far as possible and return to the starting position.

Plank Shoulder Taps - x10ea Start in push-up position w/ feet out wide. Lift right hand up and touch left shoulder and return to starting position. Do not move the hips at all. Keep the core tight.

Ankle Stability

MB Reach to Toss - x3ea. Stand on one leg. Reach the MB out in front while doing a inverted ham. Stand up tall and throw it to your partner or the wall. Staying on one foot the entire time. Catch the ball and repeat. Then switch legs. Then stand on the right leg to the side of the partner. Repeat, but throw the ball off to the side. Then switch still on the right foot. Finally, switch legs.

Lift

Saftey Bar Split Squat - 4x5 5XX Start by getting under a safety squat bar. Place your hands on the outsides of the racks for balance. Set the feet in a split stance position with the back foot being up on the toes. Sit the hips back and bring the knee down to the ground. Stand up by forcing the front heel into the ground.

Hip Airplane - 4x5ea. Place the right hand on a hurdle and the left hand on your hip. Keep the right foot on the ground and reach the left leg back. Hinge at the waste so chest in facing the ground. Keep the right knee slightly bend and the hip bones facing the ground. Dip the left hip to the ground then back up to the sky taking the head and eyes with you. Come back to the starting position and repeat.

Weighted Pull-ups -4x5 (5XX) Slow on the way down and go completely straight. If possible pull back up, if not jump back up to the top or step up using the ra

BB RDL -3x8 (3XX) - Stand in athletic position with hands on barbell. Slightly bend the knees and hinge at the waste, keeping the back flat the entire time. The barbell will go right below the knee cap and then stand up by squeezing the glutes.

Weighted Push-ups 3x8 (5XX) Slow on the way down. If you cannot press back up go to both knees and press back up to the top.

TRX Row 3x8 (3XX) Grab the TRX handles and place the feet on the bench. Start with the arms straight and the palms away from the body. Row up so the elbows are close to the ribcage and the hands by the chest. Palms face eachother at the top.

Triphasic Chalk Talks

Session 7

Warm-up

Inverted Ham to Knee Hug - x3 ea. Stand on left leg, reach right leg back into a single leg RDL and stand tall and hug the right leg

Runners Lunge w/ Turn x3 ea. Hand overhead, step out with right leg into a lunge position with back leg straight.Place the left hand on the ground and reach the right hand to the sky with the eyes looking at the hand

Downdog - x3 Touch your toes, walk your hands out into a push-up position, then push your hips up to the sky and walk the hands back. Then pedal each heel to the ground by bending each knee. Stand up tall by walking feet to the hands

Lateral Lunge One-Way Ham - 3x ea. Step-out with the right leg into a lateral lunge, sitting down into the right leg, stand-up into a position where the feet are still out to the side. Then do an RDL reaching the hands out in front of the body.

Hip Mobility

Quadruped Rockbacks -x5:05 On hands and knees, rock back onto the heels. On the 5th one hold for 5 seconds

SL Rockbacks - x5:05 ea. Reach right leg out to the side with the foot flat on the ground and the toes facing forward. Keeping the back flat sit back onto the feel 5 time and hold for 5 seconds.

Hip Flexors - x5:05 ea. Right leg up at 90/90 with the left knee on the ground. Squeeze the left glute 5 times and hold for 5 seconds.

Pigeon - x5:05 ea. Right leg in front for pigeon position with the left leg straight. Rock the hips to the ground to the right 5 time and hold for 5 sec

Figure-4 - x5:05 ea. Right foot on left knee. Bring the left foot off the ground and rock to the left side 5 times keeping the shoulders on the ground. On last rep hold for 5 seconds.

Activations

Banded Squats - x10 Place mini-bands on above the knees. Place feet shoulder width apart if not slightly wider. Squat down keeping chest up and keep the kn

Banded Push to base - x10ea. Place mini-band above the knees. Quarters squat so shoulders are over the knees and hips are back. Push the left leg completely straight and slightly step with the right leg. Then return to the starting position.

No Money's - x10 Stand with resistance band in both hands with palms facing up. Bend both elbows so they are by the ribcage and the hands are out in front of the body. Keeping the elbows in move the hands out to the side as far as possible and return to the starting position.

Plank Shoulder Taps - x10ea Start in push-up position w/ feet out wide. Lift right hand up and touch left shoulder and return to starting position. Do not move the hips at all. Keep the core tight.

Ankle Stability

MB Reach to Toss - x3ea. Stand on one leg. Reach the MB out in front while doing a inverted ham. Stand up tall and throw it to your partner or the wall. Staying on one foot the entire time. Catch the ball and repeat. Then switch legs. Then stand on the right leg to the side of the partner. Repeat, but throw the ball off to the side. Then switch still on the right foot. Finally, switch legs.

Lift

Front Squats - 4x3 (5XX) 85% 5 seconds on the way down no pause stand up Elbows up, sit down into a squat position and then stand up tall as fast as possibl

Dead Bug opp arm and leg - 4x5ea. Lay on back with knees @ 90° and hand up to the sky. Move the right leg straight and the left arm overhead. Pause for a second then resturn to the starting position.

HK Landmine Press - 4x3ea. (5XX) Start in a half kneeling position with right knee down. The bar will be in the right hand with the elbow in and the bar at shoulder height, press the bar up at a 45°. Bring the bar back to the starting position keeping the elbow in the entire time. 5 seconds on the way down, two hand to press back up.

SL Butt to Bench - 3x5ea.(3XX) Stand on right leg about 1 step away from the bench. Sit the hips back and reach for the bench. Take 3 seconds on the way down. Sit down on the bench for a second then stand up.

Softball Keiser Row - 3x8 (3XX) Grab the softball with both hands. Hinge at the waste with shoulders over the knees. Extend the arms then row the softballs to the chest keeping the elbows by your side. When extending straight count to 3.

KB Bottoms-up Walks 4x3 Pillars ea. Hold a kettlebell in the right hand with the elbow at shoulder height and in a 90° angle with the bottom of the kettlebell facing the sky. Walk 3 pillars and switch hands.

Triphasic Chalk Talks

Session 9

Warm-up

Inverted Ham to Knee Hug - x3 ea. Stand on left leg, reach right leg back into a single leg RDL and stand tall and hug the right leg

Runners Lunge w/ Turn x3 ea. Hand overhead, step out with right leg into a lunge position with back leg straight.Place the left hand on the ground and reach the right hand to the sky with the eyes looking at the hand

Downdog - x3 Touch your toes, walk your hands out into a push-up position, then push your hips up to the sky and walk the hands back. Then pedal each heel to the ground by bending each knee. Stand up tall by walking feet to the hands

Lateral Lunge One-Way Ham - 3x ea. Step-out with the right leg into a lateral lunge, sitting down into the right leg, stand-up into a position where the feet are still out to the side. Then do an RDL reaching the hands out in front of the body.

Hurdle Mobility

Over FWD/BWD - 2xea. Hands behing your head. Step over the hurdle bringing your knee up to your chest and then straight down if possible. Go forward for 2 alternating legs. Then go backwards for 2 alternating legs. Reset both feet before steping over the next hurdle

Over Side to Side - x1ea. Hands behing your head. Step over the hurdle bringing your knee up to your chest and then straight down if possible. Lead with the

Under Side to side - x2ea. Hands behind your head. Squat down and step through with the lead leg. Once completely under the hurdle, stand up and repeat through the hurdles.

Activations

3 way Glute Bridges - x8ea. Lay on back with legs straight. Hands up to the sky with palms facing each other. Press up through the heels to raise hips off the ground. Then move feet halfway in and complete the same thing. Lastly, bring feet all the way back to the hips and complete 8 reps at each position.

Floor Angels - x8 Lay on back with knees bent and arms in a scarecrow position. Bring the hands up as high as possible keeping the forearms on the ground the entire time. Bring elbows down as far as possible.

Prone Heel Squeezes - x8 Lay on stomach with knees outside the shoulders and the heels touching each other. Squeeze the heels together as hard as possible, then relax.

Quadruped Hand Lifts - 2x5ea. On hands and knees, keeping the back flat the entire time, raise the knees up off the ground. On coaches call lift the right then the left hand up, keeping the back flat the entire time.

Ankle Stability

3 way cone touch w/ foot - 3 cones will be in a triangle shape. The athlete will stand in the middle of the triangle. The athlete will reach the right foot to the front cone and tap the toe on the ground as close to the cone as possible. Then the right foot out to the right side back at an angle and tap as close to the cone as possible. Lastly, the athlete will reach back behind to the cone to the left and lightly touch the ground and come back up. Repeat 2 times w/ each foot.

Lift

Hang Clean - 5x1 Velocity Bring the bar down just above the hip and extend the hips to the bar. Catch the bar in the front rack position in a quarter squat. Hold for a second and stand-up tall.

Plank Reaches -4x5ea Start in push-up position w/ feet out wide. Lift right hand up to the sky with thumb up, return to starting position. Do not move the hips at all. Keep the core tight.

Bretzel - 4x3ea. Lay on your right side. Bring the right leg back so the left hand is on the right foot. The left knee is at a 90° angle and the right hand in on the left knee. Keep the left knee on the ground the entire time. Rock over to the left side trying to place both shoulders on the ground. take your head and eyes with you.

Trap Bar - 5x1 92% Keep back flat, eyes forward. Shoulders over your knees and stand-up tall. Lower the trap bar and repeat.

DB Pendlay Row - 4x2ea. Stand in an athleteic position with right hand on a bench. Slightly bend the knees and flatten the back by pressing into the heels and the butt back. With the dumbbell in the left hand row the dumbbell to the chest. When pulling up on the dumbbell keep the back flat and tha elbow by the ribcage the entire time. Do not control the dumbbell on the way down. let it comeback to the ground slightly open and repeat.

Plate band pulls - 4x8 In the rkc plank position with feet wide, reach out and grab the 10 pound plate. Pull it on the ground with a band around it and the rack to the shoulder and slowly return it back to starting position. Repeat using the other arm.

Triphasic Chalk Talks

Session 10

Warm-up

Inverted Ham to Knee Hug - x3 ea. Stand on left leg, reach right leg back into a single leg RDL and stand tall and hug the right leg

Runners Lunge w/ Turn x3 ea. Hand overhead, step out with right leg into a lunge position with back leg straight.Place the left hand on the ground and reach the right hand to the sky with the eyes looking at the hand

Downdog - x3 Touch your toes, walk your hands out into a push-up position, then push your hips up to the sky and walk the hands back. Then pedal each heel to the ground by bending each knee. Stand up tall by walking feet to the hands

Lateral Lunge One-Way Ham - 3x ea. Step-out with the right leg into a lateral lunge, sitting down into the right leg, stand-up into a position where the feet are still out to the side. Then do an RDL reaching the hands out in front of the body.

Hip Mobility

Quadruped Rockbacks -x5:05 On hands and knees, rock back onto the heels. On the 5th one hold for 5 seconds

SL Rockbacks - x5:05 ea. Reach right leg out to the side with the foot flat on the ground and the toes facing forward. Keeping the back flat sit back onto the feel 5 time and hold for 5 seconds.

Hip Flexors - x5:05 ea. Right leg up at 90/90 with the left knee on the ground. Squeeze the left glute 5 times and hold for 5 seconds.

Pigeon - x5:05 ea. Right leg in front for pigeon position with the left leg straight. Rock the hips to the ground to the right 5 time and hold for 5 sec

Figure-4 - x5:05 ea. Right foot on left knee. Bring the left foot off the ground and rock to the left side 5 times keeping the shoulders on the ground. On last rep hold for 5 seconds.

Activations

Banded Squats - x10 Place mini-bands on above the knees. Place feet shoulder width apart if not slightly wider. Squat down keeping chest up and keep the kn

Banded Push to base - x10ea. Place mini-band above the knees. Quarters squat so shoulders are over the knees and hips are back. Push the left leg completely straight and slightly step with the right leg. Then return to the starting position.

No Money's - x10 Stand with resistance band in both hands with palms facing up. Bend both elbows so they are by the ribcage and the hands are out in front of the body. Keeping the elbows in move the hands out to the side as far as possible and return to the starting position.

Plank Shoulder Taps - x10ea Start in push-up position w/ feet out wide. Lift right hand up and touch left shoulder and return to starting position. Do not move the hips at all. Keep the core tight.

Ankle Stability

MB Reach to Toss - x3ea. Stand on one leg. Reach the MB out in front while doing a inverted ham. Stand up tall and throw it to your partner or the wall. Staying on one foot the entire time. Catch the ball and repeat. Then switch legs. Then stand on the right leg to the side of the partner. Repeat, but throw the ball off to the side. Then switch still on the right foot. Finally, switch legs.

Lift

Saftey Bar Split Squat - 4x5 5XX Start by getting under a safety squat bar. Place your hands on the outsides of the racks for balance. Set the feet in a split stance position with the back foot being up on the toes. Sit the hips back and bring the knee down to the ground. Stand up by forcing the front heel into the ground.

Hip Airplane - 4x5ea. Place the right hand on a hurdle and the left hand on your hip. Keep the right foot on the ground and reach the left leg back. Hinge at the waste so chest in facing the ground. Keep the right knee slightly bend and the hip bones facing the ground. Dip the left hip to the ground then back up to the sky taking the head and eyes with you. Come back to the starting position and repeat.

Weighted Pull-ups -4x5 (5XX) Slow on the way down and go completely straight. If possible pull back up, if not jump back up to the top or step up using the ra

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Weighted Push-ups 3x8 (5XX) Slow on the way down. If you cannot press back up go to both knees and press back up to the top.

TRX Row 3x8 (3XX) Grab the TRX handles and place the feet on the bench. Start with the arms straight and the palms away from the body. Row up so the elbows are close to the ribcage and the hands by the chest. Palms face eachother at the top.

Transition Chalk Talks

Session 1

Warm-up

Inverted Ham to Knee Hug - x3 ea. Stand on left leg, reach right leg back into a single leg RDL and stand tall and hug the right leg

Runners Lunge w/ Turn x3 ea. Hand overhead, step out with right leg into a lunge position with back leg straight.Place the left hand on the ground and reach the right hand to the sky with the eyes looking at the hand

Downdog - x3 Touch your toes, walk your hands out into a push-up position, then push your hips up to the sky and walk the hands back. Then pedal each heel to the ground by bending each knee. Stand up tall by walking feet to the hands

Lateral Lunge One-Way Ham - 3x ea. Step-out with the right leg into a lateral lunge, sitting down into the right leg, stand-up into a position where the feet are still out to the side. Then do an RDL reaching the hands out in front of the body.

Hip Mobility

Quadruped Rockbacks -x5:05 On hands and knees, rock back onto the heels. On the 5th one hold for 5 seconds

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Hip Flexors - x5:05 ea. Right leg up at 90/90 with the left knee on the ground. Squeeze the left glute 5 times and hold for 5 seconds.

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Activations

Banded Squats - x10 Place mini-bands on above the knees. Place feet shoulder width apart if not slightly wider. Squat down keeping chest up and keep the kn

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Plank Shoulder Taps - x10ea Start in push-up position w/ feet out wide. Lift right hand up and touch left shoulder and return to starting position. Do not move the hips at all. Keep the core tight.

Ankle Stability

MB Reachin RDL's - x3ea. Stand on one leg. Reach the MB out in front while doing a inverted ham. Stand up tall.

Lift

Front Squats - 10x2 @80% on the minute. Set a timer for 10 mins. Every minute the athlete will perform a set. They will have the rest of the min to recover then go again at the beginning of the next minute.

Vertical Jump - 10x1 after each set of squat the athlete will perform 1 vertical jump where they will jump as high as possible each time.

Split Stance Landmine Press - 4x5ea. Start in a split stance position with right leg back. The bar will be in the right hand with the elbow in and the bar at shoulder height, press the bar up at a 45°. Bring the bar back to the starting position keeping the elbow in the entire time.

AP DB Row - 4x8ea. Start in an athletic position with the knees bent. Hinge at the waste and place one hand on the bench in front of you. The back should be flat. Grab the dumbbell in the other hand. Row the dumbbell to the chest and control the dumbbell on the way back down to the starting position.

Plank Circles - 4x5ea. Start in a push-up position with the hands under the shoulders and the feet outside the hips, but inside the shoulders. In one hand place a lax ball or a tennis ball. Make a circle with that hand in both directions. Make sure the hips stay level and do not rotate at all.

Transition Chalk Talks

Session 2

Warm-up

Inverted Ham to Knee Hug - x3 ea. Stand on left leg, reach right leg back into a single leg RDL and stand tall and hug the right leg

Runners Lunge w/ Turn x3 ea. Hand overhead, step out with right leg into a lunge position with back leg straight.Place the left hand on the ground and reach the right hand to the sky with the eyes looking at the hand

Downdog - x3 Touch your toes, walk your hands out into a push-up position, then push your hips up to the sky and walk the hands back. Then pedal each heel to the ground by bending each knee. Stand up tall by walking feet to the hands

Lateral Lunge One-Way Ham - 3x ea. Step-out with the right leg into a lateral lunge, sitting down into the right leg, stand-up into a position where the feet are still out to the side. Then do an RDL reaching the hands out in front of the body.

Hurdle Mobility

Over FWD/BWD - 2xea. Hands behing your head. Step over the hurdle bringing your knee up to your chest and then straight down if possible. Go forward for 2 alternating legs. Then go backwards for 2 alternating legs. Reset both feet before steping over the next hurdle

Over Side to Side - x1ea. Hands behing your head. Step over the hurdle bringing your knee up to your chest and then straight down if possible. Lead with the

Under Side to side - x2ea. Hands behind your head. Squat down and step through with the lead leg. Once completely under the hurdle, stand up and repeat through the hurdles.

Activations

3 way Glute Bridges - x8ea. Lay on back with legs straight. Hands up to the sky with palms facing each other. Press up through the heels to raise hips off the ground. Then move feet halfway in and complete the same thing. Lastly, bring feet all the way back to the hips and complete 8 reps at each position.

Floor Angels - x8 Lay on back with knees bent and arms in a scarecrow position. Bring the hands up as high as possible keeping the forearms on the ground the entire time. Bring elbows down as far as possible.

Prone Heel Squeezes - x8 Lay on stomach with knees outside the shoulders and the heels touching each other. Squeeze the heels together as hard as possible, then relax.

Quadruped Hand Lifts - 2x5ea. On hands and knees, keeping the back flat the entire time, raise the knees up off the ground. On coaches call lift the right then the left hand up, keeping the back flat the entire time.

Ankle Stability

3 way cone touch w/ hand - 3 cones will be in a triangle shape. The athlete will stand in the middle of the triangle. The athlete will reach the right hand to each cone by squating down and keeping the chest up as much as possible. Sand up tall between each cone touch and control the entire time.

Lift

Squat Jumps -5x2 @ 40% Start with the bar in a back squat position. Squat down and jump as high as possible. When landing land in a good landing position with shoulders over knees and then pause for 1 sec. and stand up tall.

Trap Bar - 5x1 90% on the minute. Keep back flat, eyes forward. Shoulders over your knees and stand-up tall. Lower the trap bar and repeat.

Broad Jumps - 5x1 Jump as far as possible, extending the hips and landing in a good position.

Pull-ups 4xHalf of Max Extend the arms at each rep. Try not to swing and pull the bar up above the chin.

Inverted Row 4x10 - Place the bar about half way above the rack. Place the hands on the bar with an overhand grip. Legs straight and the heels on the ground. Arms start straight. Pull your chest to the bar and control on the way back down.

Push-up to Reach - 3x10 Complete a push-up then reach with each hand. Then repeat again.

Transition Chalk Talks

Session 3

Warm-up

Inverted Ham to Knee Hug - x3 ea. Stand on left leg, reach right leg back into a single leg RDL and stand tall and hug the right leg

Runners Lunge w/ Turn x3 ea. Hand overhead, step out with right leg into a lunge position with back leg straight.Place the left hand on the ground and reach the right hand to the sky with the eyes looking at the hand

Downdog - x3 Touch your toes, walk your hands out into a push-up position, then push your hips up to the sky and walk the hands back. Then pedal each heel to the ground by bending each knee. Stand up tall by walking feet to the hands

Lateral Lunge One-Way Ham - 3x ea. Step-out with the right leg into a lateral lunge, sitting down into the right leg, stand-up into a position where the feet are still out to the side. Then do an RDL reaching the hands out in front of the body.

Hip Mobility

Quadruped Rockbacks -x5:05 On hands and knees, rock back onto the heels. On the 5th one hold for 5 seconds

SL Rockbacks - x5:05 ea. Reach right leg out to the side with the foot flat on the ground and the toes facing forward. Keeping the back flat sit back onto the feel 5 time and hold for 5 seconds.

Hip Flexors - x5:05 ea. Right leg up at 90/90 with the left knee on the ground. Squeeze the left glute 5 times and hold for 5 seconds.

Pigeon - x5:05 ea. Right leg in front for pigeon position with the left leg straight. Rock the hips to the ground to the right 5 time and hold for 5 sec

Figure-4 - x5:05 ea. Right foot on left knee. Bring the left foot off the ground and rock to the left side 5 times keeping the shoulders on the ground. On last rep hold for 5 seconds.

Activations

Banded Squats - x10 Place mini-bands on above the knees. Place feet shoulder width apart if not slightly wider. Squat down keeping chest up and keep the kn

Banded Push to base - x10ea. Place mini-band above the knees. Quarters squat so shoulders are over the knees and hips are back. Push the left leg completely straight and slightly step with the right leg. Then return to the starting position.

No Money's - x10 Stand with resistance band in both hands with palms facing up. Bend both elbows so they are by the ribcage and the hands are out in front of the body. Keeping the elbows in move the hands out to the side as far as possible and return to the starting position.

Plank Shoulder Taps - x10ea Start in push-up position w/ feet out wide. Lift right hand up and touch left shoulder and return to starting position. Do not move the hips at all. Keep the core tight.

Ankle Stability

MB Reachin RDL's - x3ea. Stand on one leg. Reach the MB out in front while doing a inverted ham. Stand up tall.

Lift

Walking Lunges 5x8ea. Start with dumbbells in each hand. Start with the feet together. Step out with the right foot, bend both legs and bring the left knee to the ground and tap. Bring the feet back together and repeat steping with the left leg. Bring the feet back together after each step.

SL Vertical Jump 4x2ea. Start on the right leg. Bend and jump as high as possible off of the right leg and land on both legs. Repeat on the left.

Lat Pulldowns 5x8 Slightly lean back and bring the bar to the chest. Control the bar on the way back up and don't let the body sway back and forth.

Dumbbell Bench Press - 4x5 Lay on a bench with you back on the bench and dumbbells in each hand. Start with the dumbbells in the sky with the dumbbells right over your eyes. Bring the hands down in a 45° angle. Bring dumbbells to the chest at that angle then press straight back up. Control the movement the entire time.

YTW w/ 5lbs 4x6ea. Hinge at the waist so the chest is facing the ground slightly. Bring both hands into a Y position with the thumbs facing up. Then make a T with the arms with the thumbs facing up. Lastly make a W with the arms and the thumbs facing up. Do routine 6 times total.

Dead Bug Same arm and leg - 4x5ea. Lay on back with knees @ 90° and hand up to the sky. Move the right leg straight and the right arm overhead. Pause for a second then return to the starting position.

Transition Chalk Talks

Session 4

Warm-up

Inverted Ham to Knee Hug - x3 ea. Stand on left leg, reach right leg back into a single leg RDL and stand tall and hug the right leg

Runners Lunge w/ Turn x3 ea. Hand overhead, step out with right leg into a lunge position with back leg straight.Place the left hand on the ground and reach the right hand to the sky with the eyes looking at the hand

Downdog - x3 Touch your toes, walk your hands out into a push-up position, then push your hips up to the sky and walk the hands back. Then pedal each heel to the ground by bending each knee. Stand up tall by walking feet to the hands

Lateral Lunge One-Way Ham - 3x ea. Step-out with the right leg into a lateral lunge, sitting down into the right leg, stand-up into a position where the feet are still out to the side. Then do an RDL reaching the hands out in front of the body.

Hip Mobility

Quadruped Rockbacks -x5:05 On hands and knees, rock back onto the heels. On the 5th one hold for 5 seconds

SL Rockbacks - x5:05 ea. Reach right leg out to the side with the foot flat on the ground and the toes facing forward. Keeping the back flat sit back onto the feel 5 time and hold for 5 seconds.

Hip Flexors - x5:05 ea. Right leg up at 90/90 with the left knee on the ground. Squeeze the left glute 5 times and hold for 5 seconds.

Pigeon - x5:05 ea. Right leg in front for pigeon position with the left leg straight. Rock the hips to the ground to the right 5 time and hold for 5 sec

Figure-4 - x5:05 ea. Right foot on left knee. Bring the left foot off the ground and rock to the left side 5 times keeping the shoulders on the ground. On last rep hold for 5 seconds.

Activations

Banded Squats - x10 Place mini-bands on above the knees. Place feet shoulder width apart if not slightly wider. Squat down keeping chest up and keep the kn

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No Money's - x10 Stand with resistance band in both hands with palms facing up. Bend both elbows so they are by the ribcage and the hands are out in front of the body. Keeping the elbows in move the hands out to the side as far as possible and return to the starting position.

Plank Shoulder Taps - x10ea Start in push-up position w/ feet out wide. Lift right hand up and touch left shoulder and return to starting position. Do not move the hips at all. Keep the core tight.

Ankle Stability

MB Reachin RDL's - x3ea. Stand on one leg. Reach the MB out in front while doing a inverted ham. Stand up tall.

Lift

Front Squats - 10x2 @80% on the minute. Set a timer for 10 mins. Every minute the athlete will perform a set. They will have the rest of the min to recover then go again at the beginning of the next minute.

Vertical Jump - 10x1 after each set of squat the athlete will perform 1 vertical jump where they will jump as high as possible each time.

Split Stance Landmine Press - 4x5ea. Start in a split stance position with right leg back. The bar will be in the right hand with the elbow in and the bar at shoulder height, press the bar up at a 45°. Bring the bar back to the starting position keeping the elbow in the entire time.

AP DB Row - 4x8ea. Start in an athletic position with the knees bent. Hinge at the waste and place one hand on the bench in front of you. The back should be flat. Grab the dumbbell in the other hand. Row the dumbbell to the chest and control the dumbbell on the way back down to the starting position.

Plank Circes - 4x5ea. Start in a push-up position with the hands under the shoulders and the feet outside the hips, but inside the shoulders. In one hand place a lax ball or a tennis ball. Make a circle with that hand in both directions. Make sure the hips stay level and do not rotate at all.

Transition Chalk Talks

Session 5

Warm-up

Inverted Ham to Knee Hug - x3 ea. Stand on left leg, reach right leg back into a single leg RDL and stand tall and hug the right leg

Runners Lunge w/ Turn x3 ea. Hand overhead, step out with right leg into a lunge position with back leg straight.Place the left hand on the ground and reach the right hand to the sky with the eyes looking at the hand

Downdog - x3 Touch your toes, walk your hands out into a push-up position, then push your hips up to the sky and walk the hands back. Then pedal each heel to the ground by bending each knee. Stand up tall by walking feet to the hands

Lateral Lunge One-Way Ham - 3x ea. Step-out with the right leg into a lateral lunge, sitting down into the right leg, stand-up into a position where the feet are still out to the side. Then do an RDL reaching the hands out in front of the body.

Hurdle Mobility

Over FWD/BWD - 2xea. Hands behing your head. Step over the hurdle bringing your knee up to your chest and then straight down if possible. Go forward for 2 alternating legs. Then go backwards for 2 alternating legs. Reset both feet before steping over the next hurdle

Over Side to Side - x1ea. Hands behing your head. Step over the hurdle bringing your knee up to your chest and then straight down if possible. Lead with the

Under Side to side - x2ea. Hands behind your head. Squat down and step through with the lead leg. Once completely under the hurdle, stand up and repeat through the hurdles.

Activations

3 way Glute Bridges - x8ea. Lay on back with legs straight. Hands up to the sky with palms facing each other. Press up through the heels to raise hips off the ground. Then move feet halfway in and complete the same thing. Lastly, bring feet all the way back to the hips and complete 8 reps at each position.

Floor Angels - x8 Lay on back with knees bent and arms in a scarecrow position. Bring the hands up as high as possible keeping the forearms on the ground the entire time. Bring elbows down as far as possible.

Prone Heel Squeezes - x8 Lay on stomach with knees outside the shoulders and the heels touching each other. Squeeze the heels together as hard as possible, then relax.

Quadruped Hand Lifts - 2x5ea. On hands and knees, keeping the back flat the entire time, raise the knees up off the ground. On coaches call lift the right then the left hand up, keeping the back flat the entire time.

Ankle Stability

3 way cone touch w/ hand - 3 cones will be in a triangle shape. The athlete will stand in the middle of the triangle. The athlete will reach the right hand to each cone by squating down and keeping the chest up as much as possible. Sand up tall between each cone touch and control the entire time.

Lift

Squat Jumps -5x2 @ 40% Start with the bar in a back squat position. Squat down and jump as high as possible. When landing land in a good landing position with shoulders over knees and then pause for 1 sec. and stand up tall.

Trap Bar - 5x1 90% on the minute. Keep back flat, eyes forward. Shoulders over your knees and stand-up tall. Lower the trap bar and repeat.

Broad Jumps - 5x1 Jump as far as possible, extending the hips and landing in a good position.

Pull-ups 4xHalf of Max Extend the arms at each rep. Try not to swing and pull the bar up above the chin.

Inverted Row 4x10 - Place the bar about half way above the rack. Place the hands on the bar with an overhand grip. Legs straight and the heels on the ground. Arms start straight. Pull your chest to the bar and control on the way back down.

Push-up to Reach - 3x10 Complete a push-up then reach with each hand. Then repeat again.

Transition Chalk Talks

Session 6

Warm-up

Inverted Ham to Knee Hug - x3 ea. Stand on left leg, reach right leg back into a single leg RDL and stand tall and hug the right leg

Runners Lunge w/ Turn x3 ea. Hand overhead, step out with right leg into a lunge position with back leg straight.Place the left hand on the ground and reach the right hand to the sky with the eyes looking at the hand

Downdog - x3 Touch your toes, walk your hands out into a push-up position, then push your hips up to the sky and walk the hands back. Then pedal each heel to the ground by bending each knee. Stand up tall by walking feet to the hands

Lateral Lunge One-Way Ham - 3x ea. Step-out with the right leg into a lateral lunge, sitting down into the right leg, stand-up into a position where the feet are still out to the side. Then do an RDL reaching the hands out in front of the body.

Hip Mobility

Quadruped Rockbacks -x5:05 On hands and knees, rock back onto the heels. On the 5th one hold for 5 seconds

SL Rockbacks - x5:05 ea. Reach right leg out to the side with the foot flat on the ground and the toes facing forward. Keeping the back flat sit back onto the feel 5 time and hold for 5 seconds.

Hip Flexors - x5:05 ea. Right leg up at 90/90 with the left knee on the ground. Squeeze the left glute 5 times and hold for 5 seconds.

Pigeon - x5:05 ea. Right leg in front for pigeon position with the left leg straight. Rock the hips to the ground to the right 5 time and hold for 5 sec

Figure-4 - x5:05 ea. Right foot on left knee. Bring the left foot off the ground and rock to the left side 5 times keeping the shoulders on the ground. On last rep hold for 5 seconds.

Activations

Banded Squats - x10 Place mini-bands on above the knees. Place feet shoulder width apart if not slightly wider. Squat down keeping chest up and keep the kn

Banded Push to base - x10ea. Place mini-band above the knees. Quarters squat so shoulders are over the knees and hips are back. Push the left leg completely straight and slightly step with the right leg. Then return to the starting position.

No Money's - x10 Stand with resistance band in both hands with palms facing up. Bend both elbows so they are by the ribcage and the hands are out in front of the body. Keeping the elbows in move the hands out to the side as far as possible and return to the starting position.

Plank Shoulder Taps - x10ea Start in push-up position w/ feet out wide. Lift right hand up and touch left shoulder and return to starting position. Do not move the hips at all. Keep the core tight.

Ankle Stability

MB Reachin RDL's - x3ea. Stand on one leg. Reach the MB out in front while doing a inverted ham. Stand up tall.

Lift

Walking Lunges 5x8ea. Start with dumbbells in each hand. Start with the feet together. Step out with the right foot, bend both legs and bring the left knee to the ground and tap. Bring the feet back together and repeat steping with the left leg. Bring the feet back together after each step.

SL Vertical Jump 4x2ea. Start on the right leg. Bend and jump as high as possible off of the right leg and land on both legs. Repeat on the left.

Lat Pulldowns 5x8 Slightly lean back and bring the bar to the chest. Control the bar on the way back up and don't let the body sway back and forth.

Dumbbell Bench Press - 4x5 Lay on a bench with you back on the bench and dumbbells in each hand. Start with the dumbbells in the sky with the dumbbells right over your eyes. Bring the hands down in a 45° angle. Bring dumbbells to the chest at that angle then press straight back up. Control the movement the entire time.

YTW w/ 5lbs 4x6ea. Hinge at the waist so the chest is facing the ground slightly. Bring both hands into a Y position with the thumbs facing up. Then make a T with the arms with the thumbs facing up. Lastly make a W with the arms and the thumbs facing up. Do routine 6 times total.

Dead Bug Same arm and leg - 4x5ea. Lay on back with knees @ 90° and hand up to the sky. Move the right leg straight and the right arm overhead. Pause for a second then return to the starting position.

Transition Chalk Talks

Session 7

Warm-up

Inverted Ham to Knee Hug - x3 ea. Stand on left leg, reach right leg back into a single leg RDL and stand tall and hug the right leg

Runners Lunge w/ Turn x3 ea. Hand overhead, step out with right leg into a lunge position with back leg straight.Place the left hand on the ground and reach the right hand to the sky with the eyes looking at the hand

Downdog - x3 Touch your toes, walk your hands out into a push-up position, then push your hips up to the sky and walk the hands back. Then pedal each heel to the ground by bending each knee. Stand up tall by walking feet to the hands

Lateral Lunge One-Way Ham - 3x ea. Step-out with the right leg into a lateral lunge, sitting down into the right leg, stand-up into a position where the feet are still out to the side. Then do an RDL reaching the hands out in front of the body.

Hip Mobility

Quadruped Rockbacks -x5:05 On hands and knees, rock back onto the heels. On the 5th one hold for 5 seconds

SL Rockbacks - x5:05 ea. Reach right leg out to the side with the foot flat on the ground and the toes facing forward. Keeping the back flat sit back onto the feel 5 time and hold for 5 seconds.

Hip Flexors - x5:05 ea. Right leg up at 90/90 with the left knee on the ground. Squeeze the left glute 5 times and hold for 5 seconds.

Pigeon - x5:05 ea. Right leg in front for pigeon position with the left leg straight. Rock the hips to the ground to the right 5 time and hold for 5 sec

Figure-4 - x5:05 ea. Right foot on left knee. Bring the left foot off the ground and rock to the left side 5 times keeping the shoulders on the ground. On last rep hold for 5 seconds.

Activations

Banded Squats - x10 Place mini-bands on above the knees. Place feet shoulder width apart if not slightly wider. Squat down keeping chest up and keep the kn

Banded Push to base - x10ea. Place mini-band above the knees. Quarters squat so shoulders are over the knees and hips are back. Push the left leg completely straight and slightly step with the right leg. Then return to the starting position.

No Money's - x10 Stand with resistance band in both hands with palms facing up. Bend both elbows so they are by the ribcage and the hands are out in front of the body. Keeping the elbows in move the hands out to the side as far as possible and return to the starting position.

Plank Shoulder Taps - x10ea Start in push-up position w/ feet out wide. Lift right hand up and touch left shoulder and return to starting position. Do not move the hips at all. Keep the core tight.

Ankle Stability

MB Reachin RDL's - x3ea. Stand on one leg. Reach the MB out in front while doing a inverted ham. Stand up tall.

Lift

Front Squats - 10x2 @80% on the minute. Set a timer for 10 mins. Every minute the athlete will perform a set. They will have the rest of the min to recover then go again at the beginning of the next minute.

Vertical Jump - 10x1 after each set of squat the athlete will perform 1 vertical jump where they will jump as high as possible each time.

Split Stance Landmine Press - 4x5ea. Start in a split stance position with right leg back. The bar will be in the right hand with the elbow in and the bar at shoulder height, press the bar up at a 45°. Bring the bar back to the starting position keeping the elbow in the entire time.

AP DB Row - 4x8ea. Start in an athletic position with the knees bent. Hinge at the waste and place one hand on the bench in front of you. The back should be flat. Grab the dumbbell in the other hand. Row the dumbbell to the chest and control the dumbbell on the way back down to the starting position.

Plank Circles - 4x5ea. Start in a push-up position with the hands under the shoulders and the feet outside the hips, but inside the shoulders. In one hand place a lax ball or a tennis ball. Make a circle with that hand in both directions. Make sure the hips stay level and do not rotate at all.

Transition Chalk Talks

Session 8

Warm-up

Inverted Ham to Knee Hug - x3 ea. Stand on left leg, reach right leg back into a single leg RDL and stand tall and hug the right leg

Runners Lunge w/ Turn x3 ea. Hand overhead, step out with right leg into a lunge position with back leg straight.Place the left hand on the ground and reach the right hand to the sky with the eyes looking at the hand

Downdog - x3 Touch your toes, walk your hands out into a push-up position, then push your hips up to the sky and walk the hands back. Then pedal each heel to the ground by bending each knee. Stand up tall by walking feet to the hands

Lateral Lunge One-Way Ham - 3x ea. Step-out with the right leg into a lateral lunge, sitting down into the right leg, stand-up into a position where the feet are still out to the side. Then do an RDL reaching the hands out in front of the body.

Hurdle Mobility

Over FWD/BWD - 2xea. Hands behing your head. Step over the hurdle bringing your knee up to your chest and then straight down if possible. Go forward for 2 alternating legs. Then go backwards for 2 alternating legs. Reset both feet before staping over the next hurdle

Over Side to Side - x1ea. Hands behing your head. Step over the hurdle bringing your knee up to your chest and then straight down if possible. Lead with the r

Under Side to side - x2ea. Hands behind your head. Squat down and step through with the lead leg. Once completely under the hurdle, stand up and repeat through the hurdles.

Activations

3 way Glute Bridges - x8ea. Lay on back with legs straight. Hands up to the sky with palms facing each other. Press up through the heels to raise hips off the ground. Then move feet halfway in and complete the same thing. Lastly, bring feet all the way back to the hips and complete 8 reps at each position.

Floor Angels - x8 Lay on back with knees bent and arms in a scarecrow position. Bring the hands up as high as possible keeping the forearms on the ground the entire time. Bring elbows down as far as possible.

Prone Heel Squeezes - x8 Lay on stomach with knees outside the shoulders and the heels touching each other. Squeeze the heels together as hard as possible, then relax.

Quadruped Hand Lifts - 2x5ea. On hands and knees, keeping the back flat the entire time, raise the knees up off the ground. On coaches call lift the right then the left hand up, keeping the back flat the entire time.

Ankle Stability

3 way cone touch w/ hand - 3 cones will be in a triangle shape. The athlete will stand in the middle of the triangle. The athlete will reach the right hand to each cone by squating down and keeping the chest up as much as possible. Sand up tall between each cone touch and control the entire time.

Lift

Squat Jumps -5x2 @ 40% Start with the bar in a back squat position. Squat down and jump as high as possible. When landing land in a good landing position with shoulders over knees and then pause for 1 sec. and stand up tall.

Trap Bar - 5x1 90% on the minute. Keep back flat, eyes forward. Shoulders over your knees and stand-up tall. Lower the trap bar and repeat.

Broad Jumps - 5x1 Jump as far as possible, extending the hips and landing in a good position.

Pull-ups 4xHalf of Max Extend the arms at each rep. Try not to swing and pull the bar up above the chin.

Inverted Row 4x10 - Place the bar about half way above the rack. Place the hands on the bar with an overhand grip. Legs straight and the heels on the ground. Arms start straight. Pull your chest to the bar and control on the way back down.

Push-up to Reach - 3x10 Complete a push-up then reach with each hand. Then repeat again.

Transition Chalk Talks

Session 9

Warm-up

Inverted Ham to Knee Hug - x3 ea. Stand on left leg, reach right leg back into a single leg RDL and stand tall and hug the right leg

Runners Lunge w/ Turn x3 ea. Hand overhead, step out with right leg into a lunge position with back leg straight.Place the left hand on the ground and reach the right hand to the sky with the eyes looking at the hand

Downdog - x3 Touch your toes, walk your hands out into a push-up position, then push your hips up to the sky and walk the hands back. Then pedal each heel to the ground by bending each knee. Stand up tall by walking feet to the hands

Lateral Lunge One-Way Ham - 3x ea. Step-out with the right leg into a lateral lunge, sitting down into the right leg, stand-up into a position where the feet are still out to the side. Then do an RDL reaching the hands out in front of the body.

Hip Mobility

Quadruped Rockbacks -x5:05 On hands and knees, rock back onto the heels. On the 5th one hold for 5 seconds

SL Rockbacks - x5:05 ea. Reach right leg out to the side with the foot flat on the ground and the toes facing forward. Keeping the back flat sit back onto the feel 5 time and hold for 5 seconds.

Hip Flexors - x5:05 ea. Right leg up at 90/90 with the left knee on the ground. Squeeze the left glute 5 times and hold for 5 seconds.

Pigeon - x5:05 ea. Right leg in front for pigeon position with the left leg straight. Rock the hips to the ground to the right 5 time and hold for 5 sec

Figure-4 - x5:05 ea. Right foot on left knee. Bring the left foot off the ground and rock to the left side 5 times keeping the shoulders on the ground. On last rep hold for 5 seconds.

Activations

Banded Squats - x10 Place mini-bands on above the knees. Place feet shoulder width apart if not slightly wider. Squat down keeping chest up and keep the kn

Banded Push to base - x10ea. Place mini-band above the knees. Quarters squat so shoulders are over the knees and hips are back. Push the left leg completely straight and slightly step with the right leg. Then return to the starting position.

No Money's - x10 Stand with resistance band in both hands with palms facing up. Bend both elbows so they are by the ribcage and the hands are out in front of the body. Keeping the elbows in move the hands out to the side as far as possible and return to the starting position.

Plank Shoulder Taps - x10ea Start in push-up position w/ feet out wide. Lift right hand up and touch left shoulder and return to starting position. Do not move the hips at all. Keep the core tight.

Ankle Stability

MB Reachin RDL's - x3ea. Stand on one leg. Reach the MB out in front while doing a inverted ham. Stand up tall.

Lift

Walking Lunges 5x8ea. Start with dumbbells in each hand. Start with the feet together. Step out with the right foot, bend both legs and bring the left knee to the ground and tap. Bring the feet back together and repeat steping with the left leg. Bring the feet back together after each step.

SL Vertical Jump 4x2ea. Start on the right leg. Bend and jump as high as possible off of the right leg and land on both legs. Repeat on the left.

Lat Pulldowns 5x8 Slightly lean back and bring the bar to the chest. Control the bar on the way back up and don't let the body sway back and forth.

Dumbbell Bench Press - 4x5 Lay on a bench with you back on the bench and dumbbells in each hand. Start with the dumbbells in the sky with the dumbbells right over your eyes. Bring the hands down in a 45° angle. Bring dumbbells to the chest at that angle then press straight back up. Control the movement the entire time.

YTW w/ 5lbs 4x6ea. Hinge at the waist so the chest is facing the ground slightly. Bring both hands into a Y position with the thumbs facing up. Then make a T with the arms with the thumbs facing up. Lastly make a W with the arms and the thumbs facing up. Do routine 6 times total.

Dead Bug Same arm and leg - 4x5ea. Lay on back with knees @ 90° and hand up to the sky. Move the right leg straight and the right arm overhead. Pause for a second then return to the starting position.

Transition Chalk Talks

Session 10

Warm-up

Inverted Ham to Knee Hug - x3 ea. Stand on left leg, reach right leg back into a single leg RDL and stand tall and hug the right leg

Runners Lunge w/ Turn x3 ea. Hand overhead, step out with right leg into a lunge position with back leg straight.Place the left hand on the ground and reach the right hand to the sky with the eyes looking at the hand

Downdog - x3 Touch your toes, walk your hands out into a push-up position, then push your hips up to the sky and walk the hands back. Then pedal each heel to the ground by bending each knee. Stand up tall by walking feet to the hands

Lateral Lunge One-Way Ham - 3x ea. Step-out with the right leg into a lateral lunge, sitting down into the right leg, stand-up into a position where the feet are still out to the side. Then do an RDL reaching the hands out in front of the body.

Hip Mobility

Quadruped Rockbacks -x5:05 On hands and knees, rock back onto the heels. On the 5th one hold for 5 seconds

SL Rockbacks - x5:05 ea. Reach right leg out to the side with the foot flat on the ground and the toes facing forward. Keeping the back flat sit back onto the feel 5 time and hold for 5 seconds.

Hip Flexors - x5:05 ea. Right leg up at 90/90 with the left knee on the ground. Squeeze the left glute 5 times and hold for 5 seconds.

Pigeon - x5:05 ea. Right leg in front for pigeon position with the left leg straight. Rock the hips to the ground to the right 5 time and hold for 5 sec

Figure-4 - x5:05 ea. Right foot on left knee. Bring the left foot off the ground and rock to the left side 5 times keeping the shoulders on the ground. On last rep hold for 5 seconds.

Activations

Banded Squats - x10 Place mini-bands on above the knees. Place feet shoulder width apart if not slightly wider. Squat down keeping chest up and keep the kn

Banded Push to base - x10ea. Place mini-band above the knees. Quarters squat so shoulders are over the knees and hips are back. Push the left leg completely straight and slightly step with the right leg. Then return to the starting position.

No Money's - x10 Stand with resistance band in both hands with palms facing up. Bend both elbows so they are by the ribcage and the hands are out in front of the body. Keeping the elbows in move the hands out to the side as far as possible and return to the starting position.

Plank Shoulder Taps - x10ea Start in push-up position w/ feet out wide. Lift right hand up and touch left shoulder and return to starting position. Do not move the hips at all. Keep the core tight.

Ankle Stability

MB Reachin RDL's - x3ea. Stand on one leg. Reach the MB out in front while doing a inverted ham. Stand up tall.

Lift

Front Squats - 10x1 @85% on the minute. Set a timer for 10 mins. Every minute the athlete will perform a set. They will have the rest of the min to recover then go again at the beginning of the next minute.

Vertical Jump - 10x1 after each set of squat the athlete will perform 1 vertical jump where they will jump as high as possible each time.

Split Stance Landmine Press - 4x3ea. Start in a split stance position with right leg back. The bar will be in the right hand with the elbow in and the bar at shoulder height, press the bar up at a 45°. Bring the bar back to the starting position keeping the elbow in the entire time.

AP DB Row - 4x5ea. Start in an athletic position with the knees bent. Hinge at the waste and place one hand on the bench in front of you. The back should be flat. Grab the dumbbell in the other hand. Row the dumbbell to the chest and control the dumbbell on the way back down to the starting position.

Plank Cirlces - 4x5ea. Start in a push-up position with the hands under the shoulders and the feet outside the hips, but inside the shoulders. In one hand place a lax ball or a tennis ball. Make a circle with that hand in both directions. Make sure the hips stay level and do not rotate at all.

Transition Chalk Talks

Session 11

Warm-up

Inverted Ham to Knee Hug - x3 ea. Stand on left leg, reach right leg back into a single leg RDL and stand tall and hug the right leg

Runners Lunge w/ Turn x3 ea. Hand overhead, step out with right leg into a lunge position with back leg straight.Place the left hand on the ground and reach the right hand to the sky with the eyes looking at the hand

Downdog - x3 Touch your toes, walk your hands out into a push-up position, then push your hips up to the sky and walk the hands back. Then pedal each heel to the ground by bending each knee. Stand up tall by walking feet to the hands

Lateral Lunge One-Way Ham - 3x ea. Step-out with the right leg into a lateral lunge, sitting down into the right leg, stand-up into a position where the feet are still out to the side. Then do an RDL reaching the hands out in front of the body.

Hurdle Mobility

Over FWD/BWD - 2xea. Hands behing your head. Step over the hurdle bringing your knee up to your chest and then straight down if possible. Go forward for 2 alternating legs. Then go backwards for 2 alternating legs. Reset both feet before steping over the next hurdle

Over Side to Side - x1ea. Hands behing your head. Step over the hurdle bringing your knee up to your chest and then straight down if possible. Lead with the r

Under Side to side - x2ea. Hands behind your head. Squat down and step through with the lead leg. Once completely under the hurdle, stand up and repeat through the hurdles.

Activations

3 way Glute Bridges - x8ea. Lay on back with legs straight. Hands up to the sky with palms facing each other. Press up through the heels to raise hips off the ground. Then move feet halfway in and complete the same thing. Lastly, bring feet all the way back to the hips and complete 8 reps at each position.

Floor Angels - x8 Lay on back with knees bent and arms in a scarecrow position. Bring the hands up as high as possible keeping the forearms on the ground the entire time. Bring elbows down as far as possible.

Prone Heel Squeezes - x8 Lay on stomach with knees outside the shoulders and the heels touching each other. Squeeze the heels together as hard as possible, then relax.

Quadruped Hand Lifts - 2x5ea. On hands and knees, keeping the back flat the entire time, raise the knees up off the ground. On coaches call lift the right then the left hand up, keeping the back flat the entire time.

Ankle Stability

3 way cone touch w/ foot - 3 cones will be in a triangle shape. The athlete will stand in the middle of the triangle. The athlete will reach the right foot to the front cone and tap the toe on the ground as close to the cone as possible. Then the right foot out to the right side back at an angle and tap as close to the cone as possible. Lastly, the athlete will reach back behind to the cone to the left and lightly touch the ground and come back up. Repeat 2 times w/ each foot.

Lift

Squat Jumps -5x1 @ 40% Start with the bar in a back squat position. Squat down and jump as high as possible. When landing land in a good landing position with shoulders over knees and then pause for 1 sec. and stand up tall.

BB RDL -5x3 on the min - Stand in athletic position with hands on barbell. Slightly bend the knees and hinge at the waste, keeping the back flat the entire time. The barbell will go right below the knee cap and then stand up by squeezing the glutes.

Broad Jumps - 5x1 Jump as far as possible, extending the hips and landing in a good position.

Pull-ups 4xHalf of Max + 2 Extend the arms at each rep. Try not to swing and pull the bar up above the chin.

Inverted Row 4x8 - Place the bar about half way above the rack. Place the hands on the bar with an overhand grip. Legs straight and the heels on the ground. Arms start straight. Pull your chest to the bar and control on the way back down.

Push-up to Reach - 3x10 Complete a push-up then reach with each hand. Then repeat again.

Transition Chalk Talks

Session 12

Warm-up

Inverted Ham to Knee Hug - x3 ea. Stand on left leg, reach right leg back into a single leg RDL and stand tall and hug the right leg

Runners Lunge w/ Turn x3 ea. Hand overhead, step out with right leg into a lunge position with back leg straight.Place the left hand on the ground and reach the right hand to the sky with the eyes looking at the hand

Downdog - x3 Touch your toes, walk your hands out into a push-up position, then push your hips up to the sky and walk the hands back. Then pedal each heel to the ground by bending each knee. Stand up tall by walking feet to the hands

Lateral Lunge One-Way Ham - 3x ea. Step-out with the right leg into a lateral lunge, sitting down into the right leg, stand-up into a position where the feet are still out to the side. Then do an RDL reaching the hands out in front of the body.

Hip Mobility

Quadruped Rockbacks -x5:05 On hands and knees, rock back onto the heels. On the 5th one hold for 5 seconds

SL Rockbacks - x5:05 ea. Reach right leg out to the side with the foot flat on the ground and the toes facing forward. Keeping the back flat sit back onto the feel 5 time and hold for 5 seconds.

Hip Flexors - x5:05 ea. Right leg up at 90/90 with the left knee on the ground. Squeeze the left glute 5 times and hold for 5 seconds.

Pigeon - x5:05 ea. Right leg in front for pigeon position with the left leg straight. Rock the hips to the ground to the right 5 time and hold for 5 sec

Figure-4 - x5:05 ea. Right foot on left knee. Bring the left foot off the ground and rock to the left side 5 times keeping the shoulders on the ground. On last rep hold for 5 seconds.

Activations

Banded Squats - x10 Place mini-bands on above the knees. Place feet shoulder width apart if not slightly wider. Squat down keeping chest up and keep the kn

Banded Push to base - x10ea. Place mini-band above the knees. Quarters squat so shoulders are over the knees and hips are back. Push the left leg completely straight and slightly step with the right leg. Then return to the starting position.

No Money's - x10 Stand with resistance band in both hands with palms facing up. Bend both elbows so they are by the ribcage and the hands are out in front of the body. Keeping the elbows in move the hands out to the side as far as possible and return to the starting position.

Plank Shoulder Taps - x10ea Start in push-up position w/ feet out wide. Lift right hand up and touch left shoulder and return to starting position. Do not move the hips at all. Keep the core tight.

Ankle Stability

MB Reachin RDL's - x3ea. Stand on one leg. Reach the MB out in front while doing a inverted ham. Stand up tall.

Lift

Walking Lunges 4x6ea. Start with dumbbells in each hand. Start with the feet together. Step out with the right foot, bend both legs and bring the left knee to the ground and tap. Bring the feet back together and repeat steping with the left leg. Bring the feet back together after each step.

SL Vertical Jump 4x1ea. Start on the right leg. Bend and jump as high as possible off of the right leg and land on both legs. Repeat on the left.

Lat Pulldowns 4x8 Slightly lean back and bring the bar to the chest. Control the bar on the way back up and don't let the body sway back and forth.

Dumbbell Bench Press - 4x3 Lay on a bench with you back on the bench and dumbbells in each hand. Start with the dumbbells in the sky with the dumbbells right over your eyes. Bring the hands down in a 45° angle. Bring dumbbells to the chest at that angle then press straight back up. Control the movement the entire time.

YTW w/ 5lbs 4x6ea. Hinge at the waist so the chest is facing the ground slightly. Bring both hands into a Y position with the thumbs facing up. Then make a T with the arms with the thumbs facing up. Lastly make a W with the arms and the thumbs facing up. Do routine 6 times total.

Dead Bug Same arm and leg - 4x5ea. Lay on back with knees @ 90° and hand up to the sky. Move the right leg straight and the right arm overhead. Pause for a second then resturn to the starting position.

Transition Chalk Talks

Session 13

Warm-up

Inverted Ham to Knee Hug - x3 ea. Stand on left leg, reach right leg back into a single leg RDL and stand tall and hug the right leg

Runners Lunge w/ Turn x3 ea. Hand overhead, step out with right leg into a lunge position with back leg straight.Place the left hand on the ground and reach the right hand to the sky with the eyes looking at the hand

Downdog - x3 Touch your toes, walk your hands out into a push-up position, then push your hips up to the sky and walk the hands back. Then pedal each heel to the ground by bending each knee. Stand up tall by walking feet to the hands

Lateral Lunge One-Way Ham - 3x ea. Step-out with the right leg into a lateral lunge, sitting down into the right leg, stand-up into a position where the feet are still out to the side. Then do an RDL reaching the hands out in front of the body.

Hip Mobility

Quadruped Rockbacks -x5:05 On hands and knees, rock back onto the heels. On the 5th one hold for 5 seconds

SL Rockbacks - x5:05 ea. Reach right leg out to the side with the foot flat on the ground and the toes facing forward. Keeping the back flat sit back onto the feel 5 time and hold for 5 seconds.

Hip Flexors - x5:05 ea. Right leg up at 90/90 with the left knee on the ground. Squeeze the left glute 5 times and hold for 5 seconds.

Pigeon - x5:05 ea. Right leg in front for pigeon position with the left leg straight. Rock the hips to the ground to the right 5 time and hold for 5 sec

Figure-4 - x5:05 ea. Right foot on left knee. Bring the left foot off the ground and rock to the left side 5 times keeping the shoulders on the ground. On last rep hold for 5 seconds.

Activations

Banded Squats - x10 Place mini-bands on above the knees. Place feet shoulder width apart if not slightly wider. Squat down keeping chest up and keep the kn

Banded Push to base - x10ea. Place mini-band above the knees. Quarters squat so shoulders are over the knees and hips are back. Push the left leg completely straight and slightly step with the right leg. Then return to the starting position.

No Money's - x10 Stand with resistance band in both hands with palms facing up. Bend both elbows so they are by the ribcage and the hands are out in front of the body. Keeping the elbows in move the hands out to the side as far as possible and return to the starting position.

Plank Shoulder Taps - x10ea Start in push-up position w/ feet out wide. Lift right hand up and touch left shoulder and return to starting position. Do not move the hips at all. Keep the core tight.

Ankle Stability

MB Reachin RDL's - x3ea. Stand on one leg. Reach the MB out in front while doing a inverted ham. Stand up tall.

Lift

Front Squats - 10x1 @85% on the minute. Set a timer for 10 mins. Every minute the athlete will perform a set. They will have the rest of the min to recover then go again at the beginning of the next minute.

Vertical Jump - 10x1 after each set of squat the athlete will perform 1 vertical jump where they will jump as high as possible each time.

Split Stance Landmine Press - 4x3ea. Start in a split stance position with right leg back. The bar will be in the right hand with the elbow in and the bar at shoulder height, press the bar up at a 45°. Bring the bar back to the starting position keeping the elbow in the entire time.

AP DB Row - 4x5ea. Start in an athletic position with the knees bent. Hinge at the waste and place one hand on the bench in front of you. The back should be flat. Grab the dumbbell in the other hand. Row the dumbbell to the chest and control the dumbbell on the way back down to the starting position.

Plank Circles - 4x5ea. Start in a push-up position with the hands under the shoulders and the feet outside the hips, but inside the shoulders. In one hand place a lax ball or a tennis ball. Make a circle with that hand in both directions. Make sure the hips stay level and do not rotate at all.

Transition Chalk Talks

Session 14

Warm-up

Inverted Ham to Knee Hug - x3 ea. Stand on left leg, reach right leg back into a single leg RDL and stand tall and hug the right leg

Runners Lunge w/ Turn x3 ea. Hand overhead, step out with right leg into a lunge position with back leg straight.Place the left hand on the ground and reach the right hand to the sky with the eyes looking at the hand

Downdog - x3 Touch your toes, walk your hands out into a push-up position, then push your hips up to the sky and walk the hands back. Then pedal each heel to the ground by bending each knee. Stand up tall by walking feet to the hands

Lateral Lunge One-Way Ham - 3x ea. Step-out with the right leg into a lateral lunge, sitting down into the right leg, stand-up into a position where the feet are still out to the side. Then do an RDL reaching the hands out in front of the body.

Hurdle Mobility

Over FWD/BWD - 2xea. Hands behing your head. Step over the hurdle bringing your knee up to your chest and then straight down if possible. Go forward for 2 alternating legs. Then go backwards for 2 alternating legs. Reset both feet before steping over the next hurdle

Over Side to Side - x1ea. Hands behing your head. Step over the hurdle bringing your knee up to your chest and then straight down if possible. Lead with the

Under Side to side - x2ea. Hands behind your head. Squat down and step through with the lead leg. Once completely under the hurdle, stand up and repeat through the hurdles.

Activations

3 way Glute Bridges - x8ea. Lay on back with legs straight. Hands up to the sky with palms facing each other. Press up through the heels to raise hips off the ground. Then move feet halfway in and complete the same thing. Lastly, bring feet all the way back to the hips and complete 8 reps at each position.

Floor Angels - x8 Lay on back with knees bent and arms in a scarecrow position. Bring the hands up as high as possible keeping the forearms on the ground the entire time. Bring elbows down as far as possible.

Prone Heel Squeezes - x8 Lay on stomach with knees outside the shoulders and the heels touching each other. Squeeze the heels together as hard as possible, then relax.

Quadruped Hand Lifts - 2x5ea. On hands and knees, keeping the back flat the entire time, raise the knees up off the ground. On coaches call lift the right then the left hand up, keeping the back flat the entire time.

Ankle Stability

3 way cone touch w/ foot - 3 cones will be in a triangle shape. The athlete will stand in the middle of the triangle. The athlete will reach the right foot to the front cone and tap the toe on the ground as close to the cone as possible. Then the right foot out to the right side back at an angle and tap as close to the cone as possible. Lastly, the athlete will reach back behind to the cone to the left and lightly touch the ground and come back up. Repeat 2 times w/ each foot.

Lift

Squat Jumps -5x1 @ 40% Start with the bar in a back squat position. Squat down and jump as high as possible. When landing land in a good landing position with shoulders over knees and then pause for 1 sec. and stand up tall.

BB RDL -5x3 on the min - Stand in athletic position with hands on barbell. Slightly bend the knees and hinge at the waste, keeping the back flat the entire time. The barbell will go right below the knee cap and then stand up by squeezing the glutes.

Broad Jumps - 5x1 Jump as far as possible, extending the hips and landing in a good position.

Pull-ups 4xHalf of Max + 2 Extend the arms at each rep. Try not to swing and pull the bar up above the chin.

Inverted Row 4x8 - Place the bar about half way above the rack. Place the hands on the bar with an overhand grip. Legs straight and the heels on the ground. Arms start straight. Pull your chest to the bar and control on the way back down.

Push-up to Reach - 3x10 Complete a push-up then reach with each hand. Then repeat again.

Transition Chalk Talks

Session 15

Warm-up

Inverted Ham to Knee Hug - x3 ea. Stand on left leg, reach right leg back into a single leg RDL and stand tall and hug the right leg

Runners Lunge w/ Turn x3 ea. Hand overhead, step out with right leg into a lunge position with back leg straight.Place the left hand on the ground and reach the right hand to the sky with the eyes looking at the hand

Downdog - x3 Touch your toes, walk your hands out into a push-up position, then push your hips up to the sky and walk the hands back. Then pedal each heel to the ground by bending each knee. Stand up tall by walking feet to the hands

Lateral Lunge One-Way Ham - 3x ea. Step-out with the right leg into a lateral lunge, sitting down into the right leg, stand-up into a position where the feet are still out to the side. Then do an RDL reaching the hands out in front of the body.

Hip Mobility

Quadruped Rockbacks -x5:05 On hands and knees, rock back onto the heels. On the 5th one hold for 5 seconds

SL Rockbacks - x5:05 ea. Reach right leg out to the side with the foot flat on the ground and the toes facing forward. Keeping the back flat sit back onto the feel 5 time and hold for 5 seconds.

Hip Flexors - x5:05 ea. Right leg up at 90/90 with the left knee on the ground. Squeeze the left glute 5 times and hold for 5 seconds.

Pigeon - x5:05 ea. Right leg in front for pigeon position with the left leg straight. Rock the hips to the ground to the right 5 time and hold for 5 sec

Figure-4 - x5:05 ea. Right foot on left knee. Bring the left foot off the ground and rock to the left side 5 times keeping the shoulders on the ground. On last rep hold for 5 seconds.

Activations

Banded Squats - x10 Place mini-bands on above the knees. Place feet shoulder width apart if not slightly wider. Squat down keeping chest up and keep the kn

Banded Push to base - x10ea. Place mini-band above the knees. Quarters squat so shoulders are over the knees and hips are back. Push the left leg completely straight and slightly step with the right leg. Then return to the starting position.

No Money's - x10 Stand with resistance band in both hands with palms facing up. Bend both elbows so they are by the ribcage and the hands are out in front of the body. Keeping the elbows in move the hands out to the side as far as possible and return to the starting position.

Plank Shoulder Taps - x10ea Start in push-up position w/ feet out wide. Lift right hand up and touch left shoulder and return to starting position. Do not move the hips at all. Keep the core tight.

Ankle Stability

MB Reachin RDL's - x3ea. Stand on one leg. Reach the MB out in front while doing a inverted ham. Stand up tall.

Lift

Walking Lunges 4x6ea. Start with dumbbells in each hand. Start with the feet together. Step out with the right foot, bend both legs and bring the left knee to the ground and tap. Bring the feet back together and repeat steping with the left leg. Bring the feet back together after each step.

SL Vertical Jump 4x1ea. Start on the right leg. Bend and jump as high as possible off of the right leg and land on both legs. Repeat on the left.

Lat Pulldowns 4x8 Slightly lean back and bring the bar to the chest. Control the bar on the way back up and don't let the body sway back and forth.

Dumbbell Bench Press - 4x3 Lay on a bench with you back on the bench and dumbbells in each hand. Start with the dumbbells in the sky with the dumbbells right over your eyes. Bring the hands down in a 45° angle. Bring dumbbells to the chest at that angle then press straight back up. Control the movement the entire time.

YTW w/ 5lbs 4x6ea. Hinge at the waist so the chest is facing the ground slightly. Bring both hands into a Y position with the thumbs facing up. Then make a T with the arms with the thumbs facing up. Lastly make a W with the arms and the thumbs facing up. Do routine 6 times total.

Dead Bug Same arm and leg - 4x5ea. Lay on back with knees @ 90° and hand up to the sky. Move the right leg straight and the right arm overhead. Pause for a second then resturn to the starting position.

Transition Chalk Talks

Session 16

Warm-up

Inverted Ham to Knee Hug - x3 ea. Stand on left leg, reach right leg back into a single leg RDL and stand tall and hug the right leg

Runners Lunge w/ Turn x3 ea. Hand overhead, step out with right leg into a lunge position with back leg straight.Place the left hand on the ground and reach the right hand to the sky with the eyes looking at the hand

Downdog - x3 Touch your toes, walk your hands out into a push-up position, then push your hips up to the sky and walk the hands back. Then pedal each heel to the ground by bending each knee. Stand up tall by walking feet to the hands

Lateral Lunge One-Way Ham - 3x ea. Step-out with the right leg into a lateral lunge, sitting down into the right leg, stand-up into a position where the feet are still out to the side. Then do an RDL reaching the hands out in front of the body.

Hip Mobility

Quadruped Rockbacks -x5:05 On hands and knees, rock back onto the heels. On the 5th one hold for 5 seconds

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Pigeon - x5:05 ea. Right leg in front for pigeon position with the left leg straight. Rock the hips to the ground to the right 5 time and hold for 5 sec

Figure-4 - x5:05 ea. Right foot on left knee. Bring the left foot off the ground and rock to the left side 5 times keeping the shoulders on the ground. On last rep hold for 5 seconds.

Activations

Banded Squats - x10 Place mini-bands on above the knees. Place feet shoulder width apart if not slightly wider. Squat down keeping chest up and keep the kn

Banded Push to base - x10ea. Place mini-band above the knees. Quarters squat so shoulders are over the knees and hips are back. Push the left leg completely straight and slightly step with the right leg. Then return to the starting position.

No Money's - x10 Stand with resistance band in both hands with palms facing up. Bend both elbows so they are by the ribcage and the hands are out in front of the body. Keeping the elbows in move the hands out to the side as far as possible and return to the starting position.

Plank Shoulder Taps - x10ea Start in push-up position w/ feet out wide. Lift right hand up and touch left shoulder and return to starting position. Do not move the hips at all. Keep the core tight.

Weight
Height
Vertical Jump

Lift

Front Squats -5,3,1,1 rep until form breaks and max is form.

Transition Chalk Talks

Session 17

Warm-up

Inverted Ham to Knee Hug - x3 ea. Stand on left leg. reach right leg back into a single leg RDL and stand tall and hug the right leg

Runners Lunge w/ Turn x3 ea. Hand overhead, step out with right leg into a lunge position with back leg straight.Place the left hand on the ground and reach the right hand to the sky with the eyes looking at the hand

Downdog - x3 Touch your toes, walk your hands out into a push-up position, then push your hips up to the sky and walk the hands back. Then pedal each heel to the ground by bending each knee. Stand up tall by walking feet to the hands

Lateral Lunge One-Way Ham - 3x ea. Step-out with the right leg into a lateral lunge, sitting down into the right leg, stand-up into a position where the feet are still out to the side. Then do an RDL reaching the hands out in front of the body.

Hurdle Mobility

Over FWD/BWD - 2xea. Hands behing your head. Step over the hurdle bringing your knee up to your chest and then straight down if possible. Go forward for 2 alternating legs. Then go backwards for 2 alternating legs. Reset both feet before steping over the next hurdle

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Under Side to side - x2ea. Hands behind your head. Squat down and step through with the lead leg. Once completely under the hurdle, stand up and repeat through the hurdles.

Activations

3 way Glute Bridges - x8ea. Lay on back with legs straight. Hands up to the sky with palms facing each other. Press up through the heels to raise hips off the ground. Then move feet halfway in and complete the same thing. Lastly, bring feet all the way back to the hips and complete 8 reps at each position.

Floor Angels - x8 Lay on back with knees bent and arms in a scarecrow position. Bring the hands up as high as possible keeping the forearms on the ground the entire time. Bring elbows down as far as possible.

Prone Heel Squeezes - x8 Lay on stomach with knees outside the shoulders and the heels touching each other. Squeeze the heels together as hard as possible, then relax.

Quadruped Hand Lifts - 2x5ea. On hands and knees, keeping the back flat the entire time, raise the knees up off the ground. On coaches call lift the right then the left hand up, keeping the back flat the entire time.

Isometric Pull

Lift

Trap Bar - 5,3,1,1 rep until a max. Keep good form the entire time. Once form breaks a max will be found