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## Improving vertical jump: A program design

Micheal Milo Horton

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IMPROVING VERTICAL JUMP:

A PROGRAM DESIGN

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A Project  
Presented to the  
Faculty of  
California State University,  
San Bernardino

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In Partial Fulfillment  
of the Requirements for the Degree  
Master of Arts  
in  
Education:  
Kinesiology

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by  
Micheal Milo Horton  
March 2003

IMPROVING VERTICAL JUMP:

A PROGRAM DESIGN

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San Bernardino

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by



Micheal Milo Horton

March 2003

Approved by:

  
  
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Stephen J. Kinzey, First Reader

3/13/03  
Date

  
  
\_\_\_\_\_  
Bryan Haddock, Second Reader

## ABSTRACT

The purpose of this paper is to review current literature on the mechanics and physiology of the vertical jump and to provide an understanding of the jump itself. The second purpose is to develop a step by step program to increase vertical jump from grade school through high school.

More and more athletes are taking their talents seriously and are attempting to reach higher levels of accomplishment and competition. With the growing trend and the importance placed on jumping within all sports there is a need for a safe, productive way to train for a maximum vertical jump. Careful explanation of the mechanical and physiological parts of the jump are provided along with recommendations of when and how to start jump training.

The jump is to propel the body from the floor. The main propulsion for that jump is generated by muscles acting on the skeleton to quickly move the body mass. The hip, knee and ankle joints are the primary areas of movement. The corresponding muscles for these joints compose the gluteus maximus, which extends the hip, quadriceps femoris, which extends the knee, and the gastrocnemius and soleus, which extend the foot.

Understanding the jumping process from the start to finish will be the first step to increase jumping ability for the athletes you work with. The ability to see problems and come up with solutions will bring immediate results to athletic performance. Properly training athletes will provide long term jumping improvement and long term athletic excellence. This project is designed to allow coaches, teachers, parents and athletes of all ages to improve jumping skills. The jump program itself is a step by step exercise and conditioning program. The levels are set to enable the beginner, intermediate, and advanced jumpers easy access to the program. Grade school to high school students who are attempting to improve jumping ability and athletic performance have a starting points and goals to reach.

## DEDICATION

I am compelled to dedicate this project to my children, Ryan, Randan, and Renee. They have not only helped me to bring together all the parts of this project by doing some jump modeling, but have in fact become athletes for whom this project was designed. Their never ending success has taught me to expect from them and myself.

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## CHAPTER ONE

### INTRODUCTION

Jumping is widely used as a measure of ability for many sports, such as volleyball, basketball and football where measuring the vertical jump is an initial stage of qualifying the athlete. Understanding jumping and everything behind jumping is important. From grade school through college, and the professionals, individuals make teams or do not make teams because of their jumping ability. Therefore the ability to jump comes before success in almost any sport. Understanding the mechanics, physiology, and the training behind jumping will allow athletes to improve their athletic abilities and improve their play.

The mechanics of jumping utilizes the skeleton containing all of the joints that make the body able to move. The movements are broken down to make them easier to analyze. The smaller segments are then easier to understand and train each athlete. The skeleton is made to move by the muscles that attach to them.

It is important to understand the mechanics of the jump so improvements can be made in the jump. Small or large improvements to mechanics can deliver immediate



improvement to jump height. But, sound mechanics will not continue to improve the vertical jump like sound physiological training will. Training the muscles will continue to improve the jump for throughout adolescents, the roles of growth and aging will be reviewed. Determinations will be made about how to train to allow for growth, prevent injury, and get maximal gains.

A common type of jump training is referred to by the term plyometrics. Plyometrics uses reflexes in jump training to further improve the jump. Plyometrics breaks down the jump and gives the participants ways to practice and exercise pieces of the jumping process. The interest in jumping emerged from the Eastern European countries who took over many of the Olympic events after applying plyometrics. Linking strength and speed the coaches increased athletic achievement in track and field, gymnastics, and weight lifting.

Several different definitions of the word plyometrics have been observed. Terms like "explosive power," "speed-strength," or "measurable increase" seem to be central in defining plyometrics. Training for strength and speed can include any part of the body. Then including exercises for the back and arms is still plyometrics. They are essential to the jump itself.

Training occurs over time, while a six week program can bring about an increase in jumping height of up to 5.6cm (about 2 inches) for many groups. This increase is very typical for many freshman teams who have not done plyometric training in the past (Matavulj, 2001). Athletes at this age and of any experience should come into contact with plyometric training. Jumping is widely used as a measure of ability for many sports, therefore, understanding jumping and the mechanics behind jumping is important.

#### Statement of Purpose

The purpose of this paper is to review current literature on the mechanics and physiology of vertical jumping and to give the reader an understanding of the jump itself. The second purpose is to develop a step by step program to increase the vertical jump for any athlete from grade school through high school.

## CHAPTER TWO

### MECHANICS LITERARY REVIEW

Improving mechanics is the initial step in improving the vertical jump. Mechanics involves the bones and how they work. Mechanically the jump includes using the entire skeleton, to get the entire body off of the floor. The legs are the primary driving force but the torso, arms, and head are all involved also.

The knee, hip, and ankle are the three principle joints used to propel a human off the ground. The knee plays the largest role. The knee complex is synovial and consists of the tibiofemoral joint (modified hinge) and the patellofemoral joint (gliding joint) which share the same joint capsule (Watkins, 1984). The femur and the tibia come together in this complex joint. Many ligaments are attached to these major bones. The posterior cruciate ligament and the medial collateral ligament attach at the sides and the anterior cruciate ligament attaches from the interior side to the center of the knee. Between the bones is menisci for stability and shock absorption. Synovial fluid is the lubrication for the bone and cartilage joint to maintain its smooth movement.

A jump as defined by Webster is "to spring free from the ground or other base by the muscular action of the feet and legs" (Webster, 1983). Whether a jump is further distinguished by being called a hurdle, a hop, a leap, it is any sort of a spring into the air as a result of a leg muscle action. The principle jumping muscles are the hamstring group and the gluteus maximus, which extend the hip, the quadriceps, which extend the leg at the knee, and the gastrocnemius and soleus, which plantar flex the foot and ankle (Simonian, 1980).

The primary bones involved in the leg are the femur, fibula, and tibia. The ankle muscles and the foot muscles do more to stabilize and balance the jumping process, they deliver very little power. The knee, hip, and ankle joints are very different from each other. The ankle, a condyloid joint, is stabilized by the foot. Strengthening the peroneus longus, peroneus brevis, Tibialis anterior, extensor hallucis longus, exterior digitorum longus and the peroneus teritius, or the calf muscles can help increase the jump. Strengthening the smaller muscles of the ankle can also help prevent injury. The knee provides the most movement so building the muscles that move around the knee provides the best opportunity for jump improvement. The semitendinosus, semimembranous, biceps

femoris, adductor longus, adductor brevis, gracilis, represent the hamstring area of the leg and are responsible for flexing the knee. The satorius, rectus femoris, vastus lateralis, vastus intermedius, vastus medialis, represent the quadriceps area and extend the knee and move the large femur bone to lift the body into the air. These major muscle areas are the largest factors for strengthening the legs and increasing the vertical jump (Young, 1999).

Young further emphasized the importance of the knee extensors as a central strength and jumping key. Central strength meaning the main component of strength for the jump. It was concluded that reactive strength was more important for jumping from a run up. Reactive strength is when the body uses momentum to add power to the jump. Strength was determined to be a factor in jumping but speed strength was determined to be more closely correlated to maximal performance in all varieties of jumping. Speed strength is the power needed to move the body quick as possible to reduce the time it takes to elevate and increase power. The knee is the center for movement and strengthening that area has been the largest factor in increasing strength and speed (Smith, 2001).

The hips are involved in a great deal of motion throughout the jump. The large muscles of the hip do control movement, like the glutinous maximus. The hip does not flex or extend to the degree that the knee does. The hip, being a ball and socket joint, does provide a wide variety of movement. The tensor fascia lata, gluteus maximus, gluteus medius, gluteus minimus, piriformis, superior gemellus, obturator internus, represent the what is commonly referred to as the butt, and are very powerful in moving the body.

Physical education teachers and coaches are continually confronted with problems related to the techniques used in the various physical activities they have to teach (Hay, 1978). Many training athletes simply copy the training techniques of the current champion or record holder. Modifying the championship techniques to yield better working programs for the athlete to be trained. Coaches make changes by leaving out what they perceive to be nonproductive (Hay, 1978).

This does not tell us how these current champions came up with their training programs, or if new champions have been made with copied programs. The knowledge of biomechanics is essential to starting or even copying the good parts of another program. Understanding essential

movements of the jumping motion allows for improvements to be made. Many novice jumpers will not bend at the hips and lose power by placing all of the burden for elevation on the muscles of the knees and ankles.

The hip joint is a synovial ball and socket joint, the femoral end being the ball and the hip bone the socket. The transverse ligament, anterior, superior iliofemoral, and the ischiofemoral ligaments surround the joint and the joint capsule giving it a wide range of motion and stability. Hip movement is dependent on the position of the knee and the posture at the point of flexion or extension.

The ankle is where the tibia and fibula meet the 26 bones and 40 joints in each foot. Consequently, most movements of the foot involve a large number of joints and, therefore, are quite complex and difficult to describe (Watkins, 1984). The action of raising the toes and keeping the heel motionless is known as dorsiflexion. The action of lowering the toes and keeping the heel motionless is plantar flexion. Moving the toes externally and keeping the heel motionless is known as supination. The movement of the toes internally and the heel stationary is known as pronation. The movements are important to the jump for stabilizing the take off and

landing of the entire body. Because there are so many bones and joints, the ankle provides a wide variety of movement. Although many of the injuries in sports involve the ankle, there are typically not the most serious. The function of the foot then is to transmit loads between the legs and the ground. Standing can even be tricky if the ground is not level or if there is a load involved.

Walking, running and jumping complicate stability. If these dynamic situations are moved to unlevelled or moving ground they become even more unstable. The feet and ankles have a very tough job.

A jumper's ability and style may only be limited by the rules of the sport and the laws of physics. An athlete's jump may only be limited by genetics and how much time you spend training.



### CHAPTER THREE

#### PHYSIOLOGY LITERARY REVIEW

Physiology is the study of the functions and activity of living cells. Studying these processes and how they work and grow will allow for a greater understanding of the muscles that need to be cultivated. Possibly the best way to examine the general characteristics of growth is to first look at the change in stature with chronological age. The hip, knee, and ankle are all major components of the jump with the knee playing the most prevalent role. The increasing weight and size of the individual from childhood to adulthood will be followed closely by an increase in activities they will be able to master. The adolescent growth spurt in height generally parallels organ growth. Some differences are notable like, the brain growth is well ahead of the general growth curves (Noble, 1986). So activities that relate the strength and endurance, will be easier for the individual when growth evens out and the body reaches its peak somewhere around thirty.

While an eight year old may be coordinated enough to jump rope they will not be able to keep up with a ten or twelve year old in the areas of quickness or endurance

(Watkins, 1980). Teachers and coaches should be cautioned that a child should not be viewed as a small adult. However, from strictly a physiological view, it does not seem that the body is adversely affected by exercise (Noble, 1986). Competition during the elementary years can be beneficial, but little is known physiologically about children under the age of eight. The younger the competitor the more attention should be paid to physiological age factors.

These chronological handicaps can also lead to unrealistic match ups between teams who are solely base on age. Matching up a fourteen year old who has reached maturity with a fourteen year old who has not, matches up the same skeletal age as an eighteen year old with the same skeletal age as a twelve or thirteen year old. Some would debate that all leagues be Broken up or divided by height and weight whether they are contact sports or not.

An interesting paradox exists for girls sports. Girls who are successful in sports like track and field have been found to initiate menstruation, an important pubertal point of measure, later than average (Noble, 1986). The average is determined within a school or the area being studied for each age being studied. These sports tend to favor athletes with less fat, and having less fat tends to

push back the start of menstruation. Swimmers on the other hand have an earlier menstruation initiation. Are swimmers fatter than runners or are the waters attracting athletes who are generally predisposed to early development? The same thing can happen to a young man who matures late and continues to grow after his high school basketball career is over.

The athletes in middle school are not worried about bone strength. The combination of young bones and small size reduces the load and stress on the bones. Fractures of the bones at this age are usually due to contact with an outside force. Many of the larger athletes may have problems with the lower legs as jumping frequency and height increases due to the load they are placing on these lower bones. If injury occurs the coach should be careful to stop exercises until these problems have been looked at.

During the growth spurts epiphyseal injuries occur more frequently in obese or in tall, thin boys (Gates, 1990). Participation in contact sports during this time increases the risk of injury. Poor conditioning and coordination are also factors for these injuries. At-risk, meaning under developed or over weight, adolescents should avoid contact sports until maturity.

There are also many other adolescent problems that occur and often go untreated: Osgood-Schlatter's, hip dysplasia, leg length discrepancy, slipped capital femoral epiphysis, chondromalacia patella, and many foot deformities. Chronic pain in the lower extremities should be seen as more than just growing pains and should be checked by a physician. Back and shoulder pain following exercise can also be a sign of disease or abnormality.

More than half of the youth in the United States, over 30 million, engage in competitive sports. The lower overall level of fitness is bringing in more and more sports related injuries. Sports medicine has not just evolved into a specialty for professional athletes but for the much younger as well. Injuries encountered can be divided into two main categories: those resulting from a sudden, violent application of stress (seen as fractures and ligament tears) and those resulting from recurring applications of stress [seen most commonly as stress fractures and overuse syndromes] (Gates, 1990). Immature bones are more like rubber and can bend instead of break. This too can cause problems later, such as plastic deformations. Ligament injuries occurring in isolation are rare in the immature skeleton because the adjacent epiphyseal plate will fail prior to the ligament. That is

why at the elementary levels there are few ankle turns, but at the high school level ankle turns might be the most prominent injury.

However the tables may be turned on other injuries. In the adult a sudden extension of the knee with the hip flexed can create a hamstring pull. In the immature skeleton this same maneuver results in an avulsion of the ischial tuberosity, which may require surgery (Gates, 1990).

Becoming more common among athletes are knee injuries, specifically ligament tears of the ACL and MCL. There are important guidelines that can be inferred by reviewing the available research. First, upper extremity plyometrics are best applied using trained subjects or individuals who can explosively perform the movement or pattern to gain maximal benefit from the characteristics of plyometrics. Secondly, plyometrics are not indicated early in the rehabilitation program when protection of the joint and tendinous/ligamentous structures is of primary importance (Davies, 2002).

Recovering from injuries can now take less time due to the introduction of plyometrics as a recovery training tool. While the recovery training and strengthening has become more alike between physicians, the reasons for the

jump in numbers of injured are still debated. The shoe technology, strength training advancements, playing surfaces, and even diet have taken roles in the prevention of these injuries (Davies, 2002).

Physiologically it is important to remember that the muscles are the only structures that can lengthen and shorten. Bones, ligaments, and tendons are important supporting structures but do not extend or flex to create movement. Muscles receive the information from the brain via the central nervous system. The information travels through the spinal cord to the muscle. The muscle then assumes the relaxed or flexed state. The brain needs to tell more and more muscle fibers to contract to do more and more work.

By recruiting more muscle fibers the body can do more work. So practice and repetition are used to promote neural adaptation.

Neural adaptation is the change in the nervous system that allows an individual to better coordinate the activation of muscle groups (Sale, 1986). By sending more electrical charges to the muscles you can get more power from the same number of muscle fibers. This allows the athlete to recruit more muscles effecting a greater net

force even in the absence of adaptation within the muscles themselves.

If the muscle is compared to a flashlight; an increase in light can be made by increasing the size of the bulb, or muscle, or an increase can be achieved by changing the battery, or nerve endings, to increase the electrical charge to the bulb. The effects of strength training were simulated by systematically varying three neuromuscular parameters, muscle strength, muscle speed, and motor unit recruitment. The three parameters were adjusted to find the optimal activation patterns for each individual (Nagano, 2001). Training muscles for a four to six week period allows muscles and nerves to adapt to new movements (Noble, 1986).

Joint stability, range of motion, and strength are all very important. It is important to remember that flexibility and stability are not inversely proportional. The athlete does not have to give up strength to be flexible or flexibility to be strong. If the adolescent has a normal range of motion throughout his or her body many of the normal stretching exercises at the beginning of practices can be skipped to include warm-ups. Warm-ups should progress from slow movements to faster movements simulating the movements required during competition or

subsequent tasks. A normal range of motion can be determined early in the work-out period by comparing some very basic extension and flexion movements between participants or comparing movement to a manual. If all joints are moved progressively faster, only joints with problems should be issued stretching exercises. Joint stability has several factors which include; range of motion, ligaments, muscle tension, fascia, or skin thickness, and external factors like atmospheric pressure and surface of the area you are performing on. All the factors are not controllable. Many people are simply born with weak joints and need to find ways to strengthen the muscles around the joints to prevent injury. Many conditions for jump training are easily controlled. Footwear, jumping surface, lighting, equipment can all be controlled. Injured athletes can tape ankles and wear braces to prevent further injury.

Somewhere after the ages of twenty-five to thirty the muscle strength will decline. A 28% decrease between the ages of twenty-five and seventy-four years has been noted. This decrease could be related to the changes in muscle mass (Noble, 1986). Both size and number of muscle fibers are affected. It was concluded that the muscle cells of the 65-70 year old men are still capable of maintaining as



great a metabolic flow as those of young men. In an absolute sense, however, performance declines in parallel with the decrease in muscle mass (Noble, 1986). Cardiac output also decreases about the same one percent in sedentary individuals. Age is not the main factor, lifestyle is the main factor. Positive changes in life style at any age brings about improvements in strength and endurance fitness (Sale, 1986). Some authors have noted changes in enzymes and others have stated no changes until the age of seventy. Bone density does start to decline about the age of thirty though and can be lost at a rate of one percent a year after thirty. Men who have achieved a highly trained condition have declined at much the same rates even into their eighties and nineties. The individuals who start with a more conditioned body stay ahead of the group but suffer the same declines with age.

Knowledge and the control of variables enables the participant to make the most of their jump training. Wasted time and effort can only work against the athlete on both an emotional and physical level. In the next chapters the proper jump programs and strategies will be presented.

## CHAPTER FOUR

### GETTING STARTED

Plyometrics are exercises designed to specifically train the eccentric contraction phase of the muscle's action to concentric power. Eccentric contraction occurs when the muscle lengthens under tension to decelerate the body. Whenever you run the quadriceps femoris muscle of the leg must contract so that the thigh does not collapse. Typically working the quadriceps muscle at the gym, extending the knee would be concentric tightening, working the muscle as it shortens. Eccentric concentrations, working the muscle as it gets longer, tends to wear the athlete out fast because they are not typically part of a training program. Eccentric concentrations do not get a workout on a regular basis unless there is jump training. Both of these problems can be taken care of by targeting muscles and their eccentric movements with plyometrics.

Loading the body to increase: strength, power, agility, balance, flexibility, endurance, and coordination, should be done gradually. Select exercises that attack all areas of the body. Do not attempt to do too much specializing, it is easy to miss the big picture when developing young athletes. Plyometrics do attack the

muscles in a new way, as they get longer, should be added gradually.

Off season and preseason should be the times for the highest intensity jump training. Testing can give you a good idea about how effective your program is and can also give some great motivation to the athletes. So be sure to test before you start. Five or six weeks is a fair time period to retest for maximum jumps. Some coaches stick to vertical jump tests and some include horizontal standing jumps and sprints also. Be sure to document results in writing so they can be compared at the later date, having the coach or the athlete remember has never worked out well.

The exercises are designed to be done on the grass, in the gym or on any special areas with a forgiving floor. For use with appendix F-J a rep is short for the term repetition. A rep is defined as one entire cycle of an exercise. Ten push ups are ten repetitions of the push up exercise. A set is the completion of that turn, or series of reps. So, thirty push ups broken up into tens is easily said three reps of ten to a set. Races and relays can be done to the designated lengths or shorter if time or participation are factors. Timed races for a maximum number can also be done. The times and numbers listed in

appendix A-E are recommended each participant may need to adjust for factors previously mentioned in chapters 1-4. Circuit training can be included also by making up courses and stations to be done. Use all of these methods to make the same exercises seem different. Many athletes are competitive and like the races, some are self motivated and can achieve great things without clocks or others to beat, but use variety and reach all who participate at one time or another. Many of the exercises in appendix A-F can be done back to back for variety. Again, be sure to stress quality over quantity, practice does not make perfect only perfect practice makes perfect. Select one or more from each of the following levels to be sure to have a well rounded program, do not attempt to do all of the exercises. The first day start small but think big, add exercises and increase repetitions and time when ever possible. If an exercise seems to difficult it probably is, wait four or five weeks and attempt it again.

Some of the exercises described require boxes or benches, special patterns, jump ropes, or aids. Be sure to start slow, buy a jump rope if you can but if you can not just get an old piece of rope and get jumping. Benches or box heights should start around six inches and work up to twenty-four inches. If you can not buy or make a box use a

step or a milk create be sure to make it stable and get jumping. Patterns are easily made with tape on the court or on the grass, as shown in appendix E.

Four to five weeks of low level training should allow the muscles to become accustomed to the eccentric exercises. Then move to the next higher level of exercises.

## CHAPTER FIVE

### JUMP PROGRAM

Many students come to practice or try-outs with a real interest in the game, but skills and physical condition levels that are so low they will have trouble contributing to any team.

By practicing and loading the muscles gradually the movement can be improved, the jump can be improved. Loading the body to increase: strength, power, agility, balance, flexibility, endurance, and coordination, should be done gradually.

Higher than normal forces are put on the musculoskeletal system during plyometric exercises so it is important for the participant to have a good sound base of general strength and endurance. The less intensive plyometric exercises can be incorporated into general circuit and weight training or practice. During the early stages of training it is important to be progressive for each workout.

In appendix A there are several starting exercise that do not even have the participant leaving the floor. Marching and toe and heel walks can be done as introductory exercises. Jogging and butt kickers are the

next step, these exercises do require both feet off the floor for small periods of time. Second kicks and reverse kicks develop the quickness and rhythm needed to maximize elevation. Appendix A finally ends with the squat walk which is a difficult exercises but great for conditioning. The entire upper leg and butt area can get a workout with the squat walk. Figure 30 shows an advanced student in a deep squat do not start going so low, keep the knee at about a ninety degree bend to begin.

Appendix B, level 2, adds a jump to the march and calls it a skip. Start slow and work towards maximum elevation, many professional basketball, volleyball, and football camps still start practice with a variation of this exercise. Leaps are done to maximum elevation like skips are done to maximum width. Work towards one legged jumps as high as possible, do not was energy with horizontal movement across the floor. The slide works on upper leg strength and coordination. Spots and single leg squat hops are for quickness and power in that order, again do not start with a deep squat start slow with a short drop but a strong extension of the knee. Rat-a-tats are for individual foot quickness and compass jumps are for dual foot quickness.

Appendix C, level 3, by now take-offs and landings are getting to be more natural. Hops make sure that you are incorporating all parts of the body when jumping. Exaggerate the arm swing so that each athlete gets a feel for how a maximum jump is going to feel. Zig-zag hops can be for either strength or quickness but be sure to designate what each athlete is working on before the jumping begins, short and fast or long and high. Strides are for strength and really concentrate on the quadriceps area while working the entire leg and hip. Rebounds are the first combination jump and require a small hop before rebounding to a larger jump. Hop lines are like extended zig-zags and astride jumps really work on strength not quickness, both work on maximum power at take off.

Appendix D, level 4, in place exercises like heel raises, toe raises, step-ups, and lunges all concentrate on strength be sure to mix in speed exercises with strength conditioning. Stair jumps and bench jumps are jumping on to elevated areas, be sure what you are jumping to is very stable. Pattern hops are a speed exercise, like side hops they make great race courses.

Appendix E, level 5, using balls and obstacles can be great motivation providing new intensity to some old movements. Movements are placed into game situations,



isolate a game movement and create an exercise of your own.

Appendix F-J are forms to be copied or used with another writing surface to create a daily routine. Wait until jumps or movements are mastered before moving to the next sequence or level. Careful attention to technique should be paid to each exercise, stress quality over quantity every workout. For bounding exercises use surfaces such as grass, gym floors, or any resilient surface. Avoid cement floors because there is no cushioning. Select well cushioned shoes that are stable and can absorb some of the impact. Particular attention should be given to any preexisting conditions, selecting alternative options for those athletes who have injuries or are too heavy to move into the more advanced exercises.

Anyone using all or parts of this program will increase their vertical jump. As with any training program; intensity and frequency are important contributing factors to the outcome you will receive. Great consideration has been put into the facilities and equipment. Most middle schools do not have much to work with so these exercises do not enlist any use of weight rooms, swimming pools or expensive materials.

The idea of this program is to put more force down between the foot and the ground on all these activities, a practice common to almost every sport. Many sports require short bursts of energy with many more bursts to follow (Smith, 2001). Because of the attention span, or usual lack of involvement during anything repetitious at this age these exercises can also be done as races, however, it is important to be sure to carefully work on form before starting competitions. Many coaches are getting away from static stretches to start practice because getting the muscles warm is more important than movement, beginning a practice slowly with leaps and jumps is a good way to get moving, stretched, and warmed up (Castleman, 2002). This also insures that if your offensive plays, or defensive moves take longer to learn than expected, you still will get in some kind of conditioning before time runs out on practice for the day.

APPENDIX A

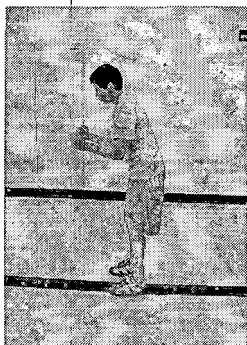
LEVEL ONE

## Level One

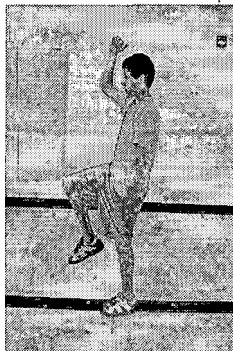
The exercises at this level are designed to be done over a distance of 30 to 40 feet or 10 to 15 meters. The reps repeated within that distance should not exceed 20, if the participants are getting more than 20 reps shorten the distance. Stress quality over quantity and be sure to push the explosive power when ever you can. Do 3 to 4 exercises at least three times a week.

### Exercise Descriptions

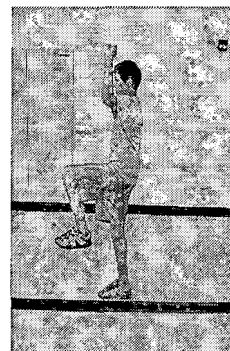
Marching - start with feet together and make a marching motion knees high, big arm swing, exaggerated band march, get higher and higher off the ground with each step



<fig 1>  
Set Stance  
ready position

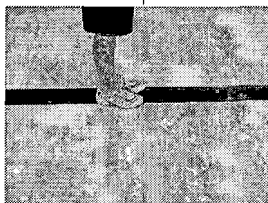


<fig 2>  
Raise right knee  
and right elbow



<fig 3>  
Raise left knee  
and left elbow

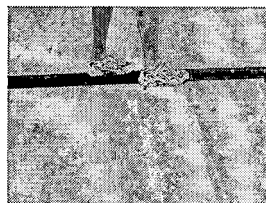
Toe Walk - start with flat feet, raise heels as high as possible with each step, athletes should attempt to have feet leave the floor without using the knees



<fig 4>  
Ready with  
flat feet



<fig 5>  
Raise heels  
high

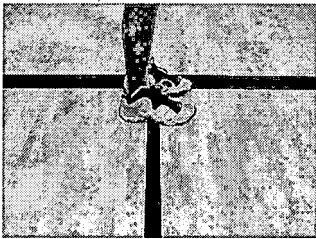


<fig 6>  
Lower heels  
to floor

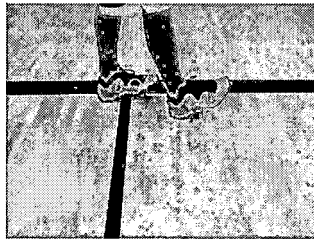


<fig 7>  
Raise heel  
high

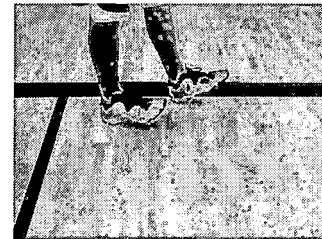
Heel Walk - start with flat feet, raise toes as high as possible with each step, speed is not a factor stride and lift the toes



<fig 8>  
Ready with  
flat feet



<fig 9>  
Raise toes  
high

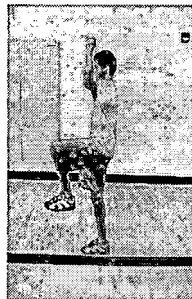


<fig 10>  
Keep toes up  
high

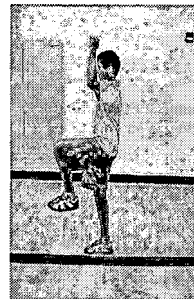
Jogging - start with feet astride get knees high, swing arms, make power movements, start with a blast of power and slow down to start the next stride with a blast of power



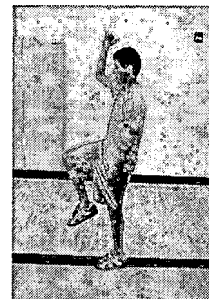
<fig 11>  
Keep knee  
Moving



<fig 12>  
right then  
left

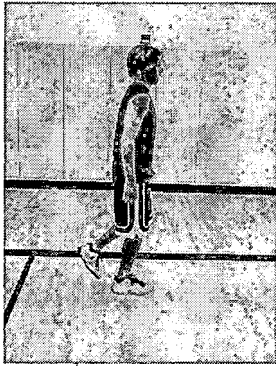


<fig 13>  
exaggerate  
motion



<fig 14>  
be consistant  
each step

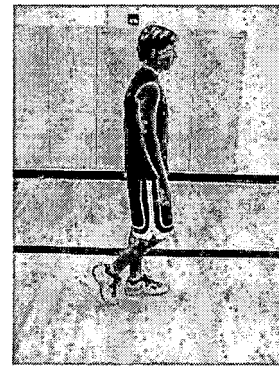
Butt Kickers - start with feet together, move with a jog, then get to an exaggerated pattern of raising the feet where heels hit the butt every stride, quick feet up and down



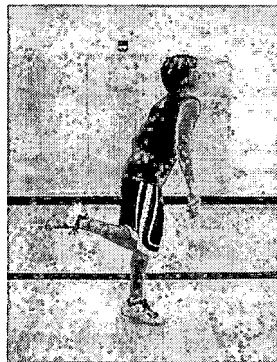
<fig 15>  
Raise left leg  
smooth motion



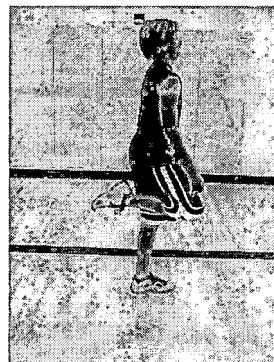
<fig 16>  
Keep moving higher  
foot to touch butt



<fig 17>  
Raise right leg  
smooth motion



<fig 18>  
Smooth motion until  
the top



<fig 19>  
Reach butt and  
and return

## Exercise

## Descriptions

Second Kick - start with a jog and add a small kick before each foot hits the floor, quick feet out and back



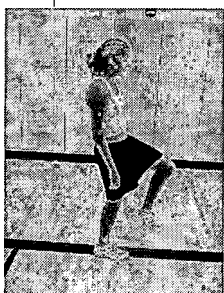
<fig 20>  
Raise left  
foot



<fig 21>  
Extend left  
foot



<fig 22>  
Return to  
floor

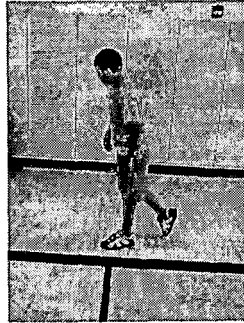


<fig 23>  
Raise right  
foot

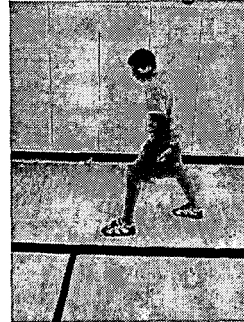
Reverse - turn around so the run area is behind you, jog backwards still keep knees high, swing arms, work with a partner so you do not run into anything or anyone



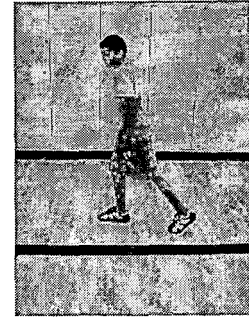
<fig 24>  
Raise right  
leg



<fig 25>  
Extend backward  
to floor



<fig 26>  
Reach back  
stretch out



<fig 27>  
Repeat  
with left



Squats - start with feet astride, lower each step by lowering the butt, thighs parallel to floor, then raise again for each step



<fig 28>  
Extend heel  
to floor



<fig 29>  
Slide heel  
along floor



<fig 30>  
Lower to comfort  
parallel



<fig 31>  
Return to upright  
position



<fig 32>  
Stand straight  
and tall

APPENDIX B

LEVEL TWO

## Level Two

The introduction to jumping is over at this stage, everything should be done to maximum height for each participant. Be sure to start with perfect form and then work to full height potential. Good shoes and a soft surface are even more important now. Increase effort with each repetition and decrease length of sets, 30 feet or ten meters should be a maximum length. You can still mix in any level one exercises at the shortened length but be sure to push athletes to go as high as possible. Increase how many exercises you do to 6 to 8 by mixing in level one and level two movements.

### Exercise

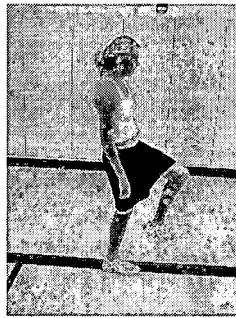
### Descriptions

Skip - start with feet astride get knees high with each step, arms high, bring both feet off the ground with each stride as you move forward



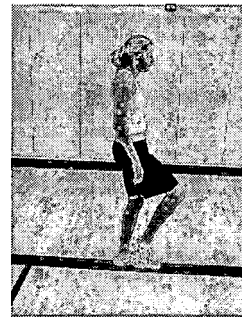
<fig 33>

Bring knees up  
and keep high



<fig 34>

Slide across  
the floor



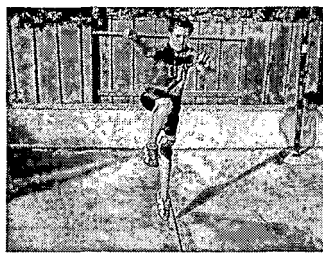
<fig 35>

Return to change  
feet

Leaps - start with feet astride get knees high with each step, arms fully extended, elbow tucked to knee, get high as possible with each step, arms reach as high as possible



<fig 36>  
Knees raise  
with arm



<fig 37>  
High knee as  
possible



<fig 38>  
Return to floor  
exchange feet

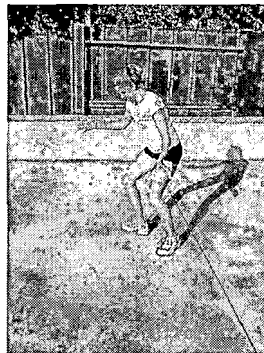
## Exercise

## Descriptions

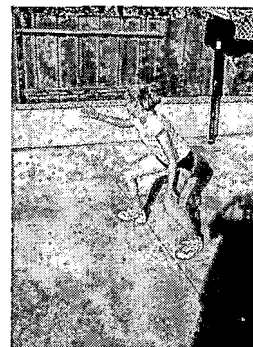
Slide - Defensive slide, keep butt low, arms out hands raised to knock down a pass, slide feet with toes pointed in direction off movement, movement goes from side to side, or "Z" pattern



<fig 39>  
Ready position  
knees bent

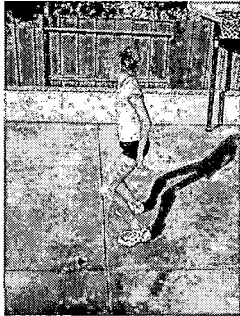


<fig 40>  
Point foot in  
direction of  
target



<fig 41>  
Slide foot towards  
target, hands  
raised

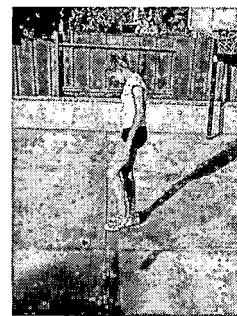
Spots - start with feet together very short strides, high knees, arms swing each step is only 6 inches, feet are close together, they should not pass each other in one step



<fig 42>  
Ready position  
knees bent



<fig 43>  
Raise feet



<fig 44>  
Exchange feet  
slightly small step

## Exercise

## Descriptions

Single Leg Squat Hops - start with feet astride, one leg out front, lower to thigh parallel to the ground, and hop up, hops are tall not long



<fig 45>  
Ready position  
hands up



<fig 46>  
Lift heel and  
lower butt



<fig 47>  
Quick lift  
begin to reach



<fig 48>  
One leg jump  
off the ground

Rat-A-Tats - start with feet together, fast feet, 3-5cm high steps, quick motion, rat-a-tat sound

Just like the Spots exercise listed above except fast as possible on the feet, rat-a-tat comes from the sound you should hear

Compass Jumps - start with feet together, jump north, south, east, west with a quick short jump, keep moving no rest between jumps

The object is to hop in a pattern, keeping feet together, moving as quickly as possible to the next area.

APPENDIX C  
LEVEL THREE

## Level Three

Jumping should be becoming more natural, everything should be done to maximum height for each participant. Be sure to start with perfect form and then work to full height potential. Good shoes and a soft surface are even more important now. Keep the same length for sets, 30 feet or ten meters should be a maximum length. You can still mix in level one and two exercises at the shortened length but be sure to push jumps to their maximum. Stay consistent with the number of exercises, 6 to 8 by mixing in level one, two, and three movements.

### Exercise

### Descriptions

Hops - start with feet together, keep feet together for every jump, high and far



<fig 49>

Ready position  
start knee bend



<fig 50>

Raise arms  
extend legs



<fig 51>

Landing square  
feet apart



Zig-Zag Hops - start with feet together, keep feet together for every jump, high and far, in a zig-zag pattern, from one side of a line to the other



<fig 52>  
Ready position  
feet apart



<fig 53>  
Hop to one  
side of line



<fig 54>  
Return to other  
side of line

Strides - start with feet together, use an elongated running pattern, every movement long and high



<fig 55>  
Right foot  
stretch



<fig 56>  
Left foot then  
more stretch



<fig 57>  
Lean and cover  
some ground

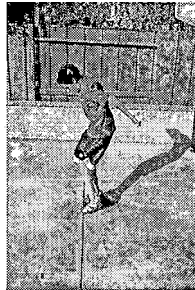
## Exercise

## Descriptions

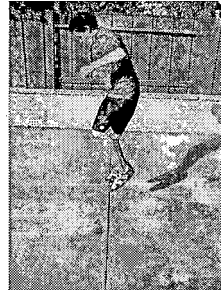
Rebounds - start with feet together, three steps jump stop, high jump, off both feet, hands high to grab a rebound, repeat



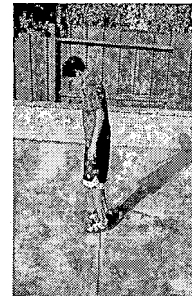
<fig 58>  
Three steps  
to start jump



<fig 59>  
Start arms  
lower butt



<fig 60>  
Jump to plant  
feet on ground

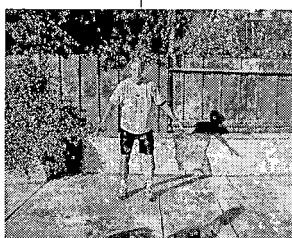


<fig 61>  
Feet square  
on ground

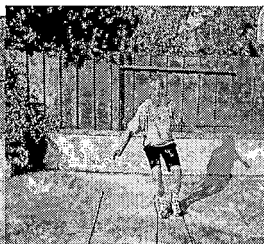
Zig-zag stops - start with feet together, jump stop to triple threat position, three steps and repeat in a zig-zag pattern

Just like above jump stops but alternate small right and left turns to preclude the actual jump stop.

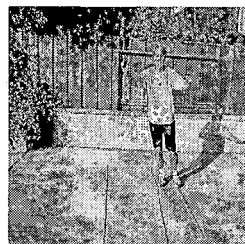
Line jumps - start with feet together, two lines three feet apart, never touch in the middle, jump back and forth in a zig-zag pattern until the lines end



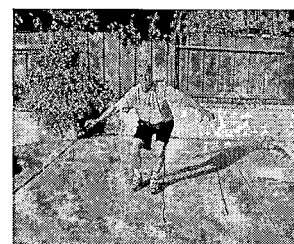
<fig 62>  
Ready position  
hands high



<fig 63>  
Feet astride  
arms wide



<fig 64>  
Return to  
other side



<fig 65>  
Start again  
do not stop

Hop line jumps - Same as above with feet together, lines moved to two feet apart so feet can stay together



<fig 66>  
Ready position  
knees bent



<fig 67>  
Jump to other  
side of line



<fig 68>  
Feet together  
square landing

Astride jumps - start with feet astride, shoulder width, high and far keeping feet shoulder width apart, bend at the knees, swing the arms



<fig 69>  
Ready position  
feet apart



<fig 70>  
High and far as  
possible each jump

APPENDIX D

LEVEL FOUR

## Level Four

### In Place Exercises

These exercises can be done in a small area, races need to be done to a number or time limit with the most within a given time being the winner. Fifteen seconds is a good starting place 30 seconds is a good ending or goal time for these exercises. Sets and reps are good for those who would rather count jumps or strides either way will work. Jumping should be natural, keep working on perfectly executed each movement, and then work to full height potential. These exercises are designed to be done without lateral movement. You can still mix in level one, two and three exercises but the movements should become stationary. Reps should be 10 to 12 with 30 seconds of rest between 3 sets. Stay consistent with the number of exercises, 6 to 8 using most of level four exercises but still mixing in all levels.

#### Exercise

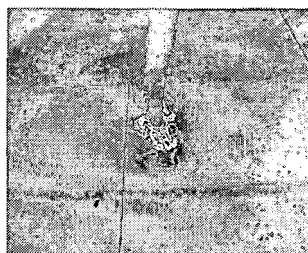
#### Descriptions

Standing heel raises - start with feet together, go up on the toes so heels are as high as possible, down and up through full range of motion



<fig 71>

Heels on ground  
stretch the calf



<fig 72>

Heels high as  
possible burst up

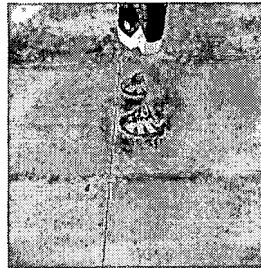
## Exercise

## Descriptions

Standing toe raises - start with feet together, toes raised as high as possible, up on the heels through the full range of motion

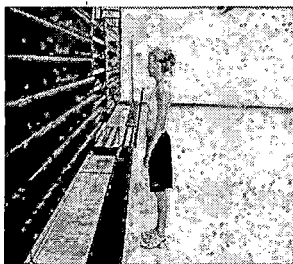


<fig 73>  
Toes on the  
ground

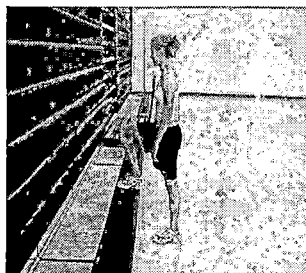


<fig 74>  
Toes to the  
sky, high as possible

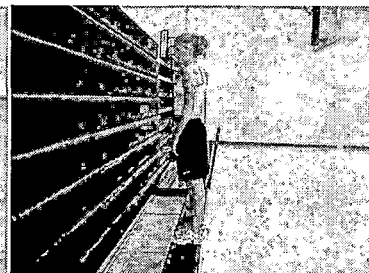
Step-ups - start with feet together, step up to bench, right foot first and down with the left then lead with the left and down with the right



<fig 75>  
Feet together  
ready to move



<fig 76>  
Right knee high  
burst of power

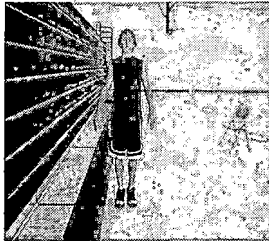


<fig 77>  
Straight up and down  
back straight, return

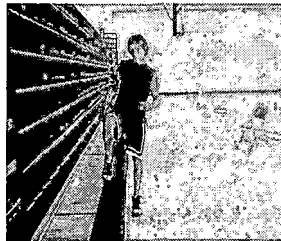
## Exercise

## Descriptions

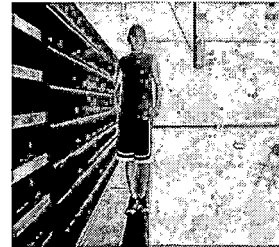
Side Step-ups - start with feet together standing with the bench to your right, step up to bench, right foot first and down with the left next set lead with the left and down with the right



<fig 78>  
Ready position  
feet together



<fig 79>  
Right leg high  
move quickly



<fig 80>  
Stand straight  
back straight up

## Exercise

## Descriptions

Lunges - start with feet together, step and lower back knee almost to the floor, step and switch to lower other knee to the floor, continue across the floor with this up and down motion



<fig 81>  
Ready position  
feet astride



<fig 82>  
Big step forward  
left foot, right  
knee to ground

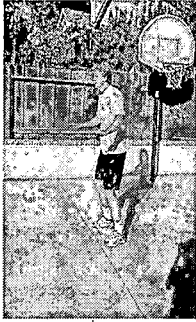


<fig 83>  
Big step forward  
right foot, left  
knee to ground

## Exercise

## Descriptions

Squat jumps - start with feet together, bend knees so that thighs are parallel to floor, jump high as you can on every squat, exploding to the maximum height



<fig 84>  
Ready position  
hands high



<fig 85>  
Heels out  
butt down



<fig 86>  
Burst of power  
moving up



<fig 87>  
High jump  
square landing

Stair hops - start with feet together, hop up a nearby stairs, or bleachers, keep feet together at all times



<fig 88>  
Ready position  
hands up

<fig 89>  
Hop to next step  
high in control

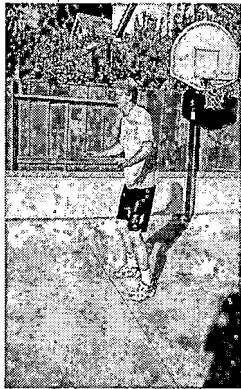
<fig 90>  
Square landing  
feet astride



## Exercise

## Descriptions

Single Leg Squat - start with feet together, bend knees so that thighs are parallel to floor, return to upright position, exploding to the top



<fig 91>  
Ready position  
hands high



<fig 92>  
Low as possible  
butt down, leg out



<fig 93>  
Burst of speed  
to top standing

Astride jumps to bench - start with feet astride, hop with feet astride on the bench, jump with feet astride to the ground



<fig 94>  
Ready position  
hands high



<fig 95>  
Feet apart  
square landing

## Exercise

## Descriptions

Hops - start with feet together, straight or pattern, square, star, tic-tac-toe



<fig 96>

Keep feet together at all times as you go up and down around or across.

Side hops - start with feet together, side to side, short hops staying in the same position



<fig 97>

Ready position  
knees bent



<fig 98>

Feet together  
square landing



<fig 99>

From one side  
of line to another

## Exercise

## Descriptions

Jumping Jacks - coordination of hands and feet, start with feet together, and hands at the sides, jump to feet apart shoulder width or more and hands raised to over head, keep repeating not moving the original position



<fig 100>  
Ready position  
knees bent



<fig 101>  
Feet apart  
hands up



<fig 102>  
Feet together  
hands down

Skipping in place - start with feet together, exaggerated skip in one area, do not move forward, keep knees and hands high



<fig 103>  
Right knee high  
arms up



<fig 104>  
Left knee high  
arms up

APPENDIX E  
IN PLACE EXERCISES

## Level Five

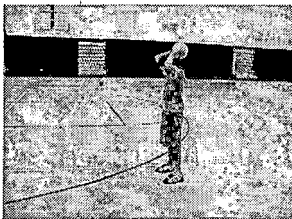
### Games and Steps

#### Games-

Races need to be done to a number or time limit rather than a distance. Most races to a distance lose their vertical component and that is what we are attempting to improve. Any of the exercises can be made into a race by partnering off and counting 20 jumps or timing an event and having the partners count how many jumps, baskets or touches occur. Set the reps or time limit consistent to what workouts are developing to be. One minute is a long time to compete in a jumping exercise, 30 seconds would be a maximum. Elevation can be maximized by adding suspended bungy cords to a course or event to keep participants reaching a maximum level. Keep working on perfect form and then work to full height potential. Quality with the competition can go down, bad jumps or reps should not be rewarded, have counters or spotters only count good quality work.

Exercise	Descriptions
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<u>Ball bounce</u> - start with feet together, bounce the ball and catch at the highest point, bounce and repeat	
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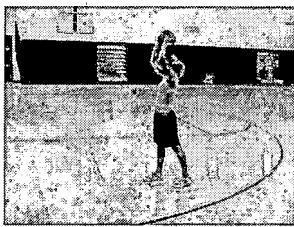
<fig 105>  
Hold the ball  
high



<fig 106>  
Bounce the ball  
high



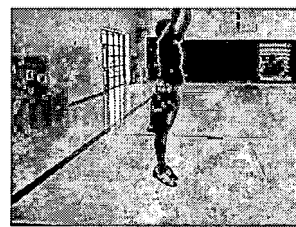
<fig 107>  
Catch the ball  
high



<fig 108>  
Hold the ball  
high



<fig 109>  
Bounce the ball  
high

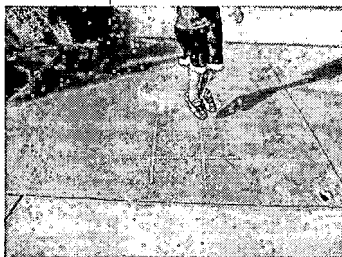


<fig 110>  
Catch the ball  
high

## Exercise

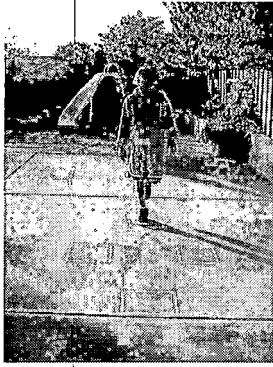
## Descriptions

Tic-Tac-Toe - start with feet together, tape a tic-tac-toe board with one foot squares then use patterns, in and out of middle, only corners, diagonal, down the middle, good for one foot or as a hop drill, quickest one to complete the pattern



<fig 111>  
Keep feet together throughout the pattern

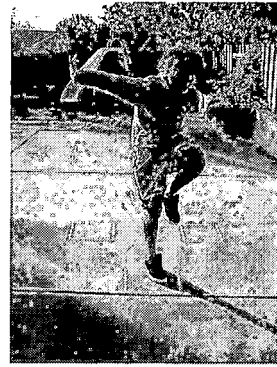
Hop Scotch - start with feet together, tape double spaced hop scotch board with one foot squares and two foot spaces, then use a bean bag to hit the squares ( bean bags make it easier to hit the squares, work on jumping not throwing)



<fig 112>  
Single leg  
start



<fig 113>  
Double leg  
landing



<fig 114>  
Single leg landing  
and continue

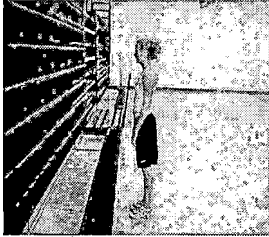
### Steps-

Jumping will not be natural moving on and off the steps to begin with, start slow. In time everything should be done to maximum height for each participant. Be sure to start with perfect form and then work to full height potential. Good shoes and a soft surface are even more important now. Sets should start with 10 and work to a maximum of 20. Starting height should be 6" for the younger, under 12 years old, and 12" for any participant over 12 years old. Skipping steps can be done after the original one step is mastered, keep coming back to single steps so quickness can be worked on. Stay consistent with the number of exercises, 6 to 8.

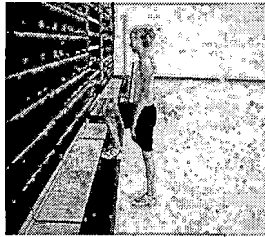
## Exercise

## Descriptions

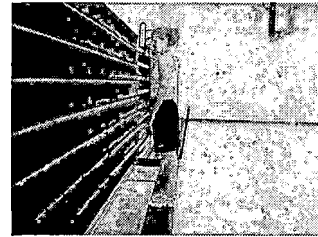
Straight - start with feet together, feet on ground step to the box, up top fully extend the body before returning to ground; up with one foot and down with the other



<fig 115>  
Ready position  
back straight

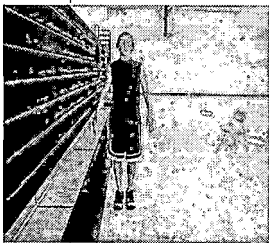


<fig 116>  
Knee high raise  
foot to step

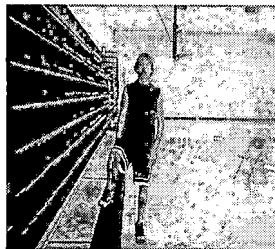


<fig 117>  
Stand straight up  
keep back straight

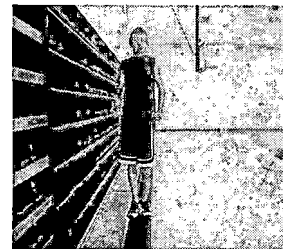
Lateral steps - start with feet together, side step to box or stairs, all the way up the turn and start with the other leg



<fig 118>  
Ready position  
back straight



<fig 119>  
Knee high raise  
foot to step



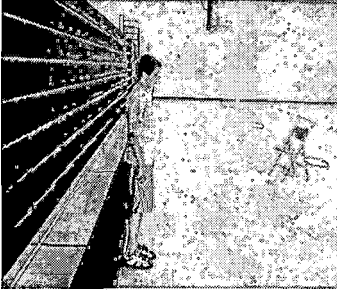
<fig 120>  
Stand straight up  
keep back straight



## Exercise

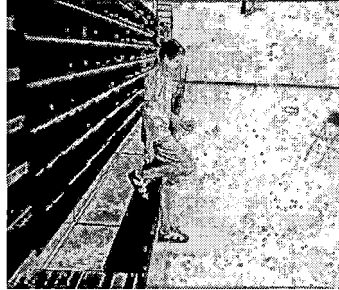
## Descriptions

Reverse - start with feet together, with feet on ground step up backward to the box, return to the ground with other leg, do not turn around, continue alternating legs



<fig 112>

Stand with back to  
step



<fig 122>

Raise leg to step  
then stand straight

Bleachers - start with feet together, power stepping up and down, start with 1 minute, or make a course to use the full length of the bleacher or stadium



<fig 123>

Keep knees high  
Push off solid

<fig 124>

Plant foot firmly  
burst of power

<fig 125>

Raise hands high  
stay square

Hills - start with feet together, power stepping up and down, start with 1 minute, or full length of hill

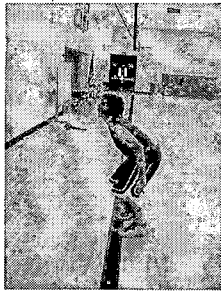
Same as bleachers only on a steep hill, keep knees high and push each step off the ground firmly

Dunes - start with feet together, power stepping up and down the sand, start with a minute or length of the dune, much harder than hills on solid ground Keep feet moving the sand makes pushing off very difficult at the Basket

Jumping will not be natural movement with a moving target, start slow. Work towards maximum height for each participant. Be sure to start with perfect execution and then work to full height potential. At first sets will be slow start with 10 and work to a maximum of 20.

<b>Exercise</b>	<b>Descriptions</b>
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<u>Jump and touch</u> - start with feet together, almost max spot on wall or backboard to hit each jump, two foot take off and landing	
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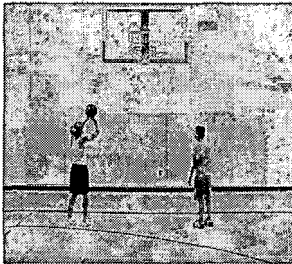


<fig 126>  
Ready position  
knees bent

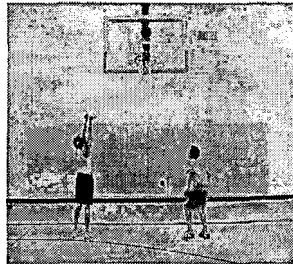


<fig 127>  
Touch as high as possible  
each time

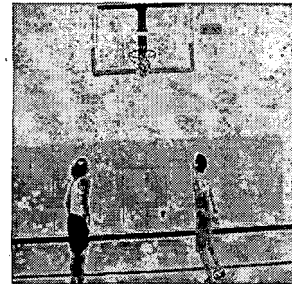
Right hand back-ups - partner starts on left and puts ball over the basket off the backboard on the right side, jumper then gets high to rebound, jumps again to shoot, keep hands high and extend for rebound and shot (do not bring ball down at any time)



<fig 128>  
Place toss off  
the backboard



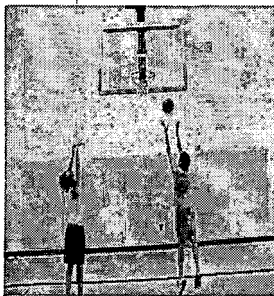
<fig 129>  
Ready for the  
rebound



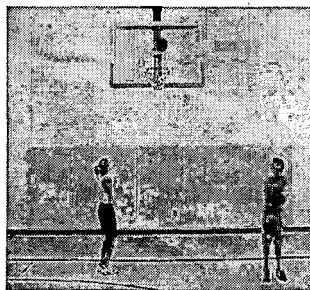
<fig 130>  
Shoot ball in the basket  
start again

Left hand back-ups - partner starts on right and puts ball over the basket off the backboard on the left side, jumper then gets high to rebound, jumps again to shoot, keep hands high and extend for rebound and shot (do not bring ball down at any time)

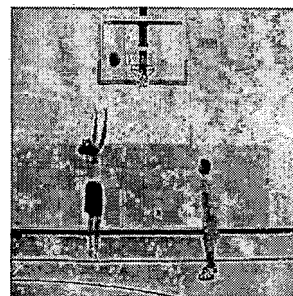
\*Advanced may do rebound and shot with the same jump



<fig 131>  
Place toss off  
the backboard

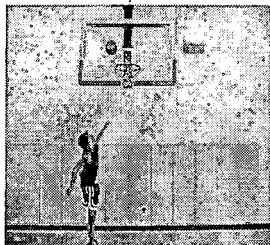


<fig 132>  
Ready for the  
rebound

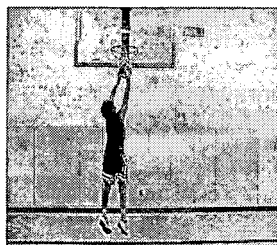


<fig 133>  
Shoot ball in the basket  
start again

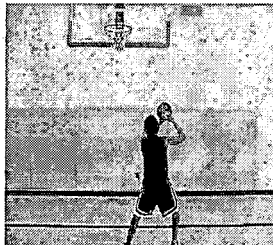
Side to Side lay-ups - Right side lay-up with the right hand. Then, left side lay-up with the left hand, rebound step left or right then jump to shoot again. Keep hands high and extend for rebound and shot



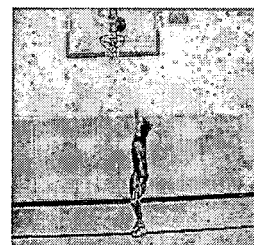
<fig 134>  
Shoot the ball  
off backboard  
left handed



<fig 135>  
Ready for the  
rebound



<fig 136>  
Shoot ball  
right handed



<fig 137>  
Then  
start again

APPENDIX F  
LEVEL ONE WORKOUT

## Daily Plan - Jump Training Level One - Outline

Daily Activities - Warm-ups

Fitness - Jump Training

Cool-downs

\* The first 3 to 5 weeks can be done with a variety of Level One exercises 3 to 4 times each week.

### **Warm-up** - Time 2-5 minutes

Many of the exercises will act as warm-ups as long as you start slow and work to fast. Marching involves all the body parts and can be used to loosen things up, start at half speed, three-quarter speed then full speed for the 30 to 40 foot distance you have marked off.

\* If this is your first lesson of the year start out slow but establish a good routine!

Warm-up and 1st exercise \_\_\_\_\_

### **Fitness and Development** - time 10-15 minutes

set up - students are lined up in two rows on one of the end lines you have set up, or counted off to go odd and even, or small groups can go all at once

2nd exercise \_\_\_\_\_

3rd exercise \_\_\_\_\_

\* if this lesson is early in the year you will want to start off with extra attention to quality, be sure each movement is performed correctly

### **Cool down** - Time 1-2 minutes

4th exercise \_\_\_\_\_

The final exercise should be done once to full potential and once at half speed with very exaggerated movements to get a final stretch

APPENDIX G  
LEVEL TWO WORKOUT

## Daily Plan - Jump Training Level Two - Outline

Daily Activities - Warm-ups

Fitness - Jump Training

Cool-downs

\* For the next 3 to 5 weeks use a variety of Level Two exercises 3 to 4 times each week.

### **Warm-up** - Time 2-5 minutes

Many of the exercises will act as warm-ups as long as you start slow and work to fast. Leaps and skips involve all the body parts and can be used to loosen things up, start at half speed, three-quarter speed then full speed for the 25 to 30 foot distance you have marked off.

Warm-up and 1st exercise \_\_\_\_\_

### **Fitness and Development** - time 15-20 minutes

set up - students are lined up in two rows

on one of the end lines you have set up, or counted off to go odd and even, or small groups can go all at once

\* Use 6-8 exercises but include a cool down

2nd exercise \_\_\_\_\_

3rd exercise \_\_\_\_\_

4th exercise \_\_\_\_\_

5th exercise \_\_\_\_\_

6th exercise \_\_\_\_\_

7th exercise \_\_\_\_\_

\* These are new jumps so you will want to start off with extra attention to quality, be sure each movement is performed correctly

### **Cool down** - Time 1-2 minutes

8th exercise \_\_\_\_\_

The final exercise should be done once to full potential and once at half speed with very exaggerated movements to get a final stretch much like the opening exercise select one that attacks all body areas



APPENDIX H  
LEVEL THREE WORKOUT

## Daily Plan - Jump Training Level Three - Outline

Daily Activities - Warm-ups

Fitness - Jump Training

Cool-downs

\* For the next 3 to 5 weeks use a variety of Level Three exercises 3 to 4 times each week.

### **Warm-up** - Time 2-5 minutes

Many of the exercises will act as warm-ups as long as you start slow and work to fast. Strides and Astride jumps involve all the body parts and can be used to loosen things up, start at half speed, three-quarter speed then full speed for the 25 to 30 foot distance you have marked off.

Warm-up and 1st exercise \_\_\_\_\_

### **Fitness and Development** - time 15-20 minutes

set up - students are lined up in two rows on one of the end lines you have set up, or counted off to go odd and even, or small groups can go all at once

\* Use 6-8 exercises but include a cool down

2nd exercise \_\_\_\_\_

3rd exercise \_\_\_\_\_

4th exercise \_\_\_\_\_

5th exercise \_\_\_\_\_

6th exercise \_\_\_\_\_

7th exercise \_\_\_\_\_

\* These are new jumps so you will want to start off with extra attention to quality, be sure each movement is performed correctly

Cool down - Time 1-2 minutes

8th exercise \_\_\_\_\_

The final exercise should be done once to full potential and once at half speed with very exaggerated movements to get a final stretch much like the opening exercise select one that attacks all body areas

APPENDIX I  
LEVEL FOUR WORKOUT

## Daily Plan - Jump Training Level Four - Outline

Daily Activities - Warm-ups

Fitness - Jump Training

Cool-downs

\* For the next 3 to 5 weeks use a variety of Level Four exercises 3 to 4 times each week.

### **Warm-up** - Time 2-5 minutes

Many of the exercises will act as warm-ups as long as you start slow and work to fast. Step ups , Lunges, and Jumping Jacks involve all the body parts and can be used to loosen things up, start at half speed, three-quarter speed then full speed. These exercises are done in place be sure each participant has ample room to move

Warm-up and 1st exercise \_\_\_\_\_

### **Fitness and Development** - time 15-20 minutes

set up - students are placed around the jump area with a good example in the middle, count out reps together or call out start and end times

\* Use 6-8 exercises but include a cool down

2nd exercise \_\_\_\_\_

3rd exercise \_\_\_\_\_

4th exercise \_\_\_\_\_

5th exercise \_\_\_\_\_

6th exercise \_\_\_\_\_

7th exercise \_\_\_\_\_

\* These are new jumps so you will want to start off with extra attention to quality, be sure each movement is performed correctly

### **Cool down** - Time 1-2 minutes

8th exercise \_\_\_\_\_

The final exercise should be done once to full potential and once at half speed with very exaggerated movements to get a final stretch much like the opening exercise select one that attacks all body areas

APPENDIX J  
LEVEL FIVE WORKOUT

## Daily Plan - Jump Training

### Level Five - Outline

### Box - Steps - Cones

Daily Activities - Warm-ups

Fitness - Jump Training

Cool-downs

\* For the next 3 to 5 weeks use a variety of Level Five exercises 3 to 4 times each week.

#### **Warm-up** - Time 2-5 minutes

Many of the exercises are high impact and will not act as a good warm up. Select favorites from any of the other levels that involve all the body parts and can be used to loosen things up, start at half speed, three-quarter speed then full speed.

Warm-up and 1st exercise \_\_\_\_\_

#### **Fitness and Development** - time 15-20 minutes

set up - students are placed at the prop used for the exercise you have selected

\* Use 6-8 exercises but include a cool down

2nd exercise \_\_\_\_\_

3rd exercise \_\_\_\_\_

4th exercise \_\_\_\_\_

5th exercise \_\_\_\_\_

6th exercise \_\_\_\_\_

7th exercise \_\_\_\_\_

\* These are new jumps off elevated areas so you will want to start off with extra attention to quality, be sure each movement is performed correctly

Cool down - Time 1-2 minutes

8th exercise \_\_\_\_\_

The final exercise should be done once to full potential and once at half speed with very exaggerated movements to get a final stretch much like the opening exercise select one that attacks all body areas from any of the previous levels

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