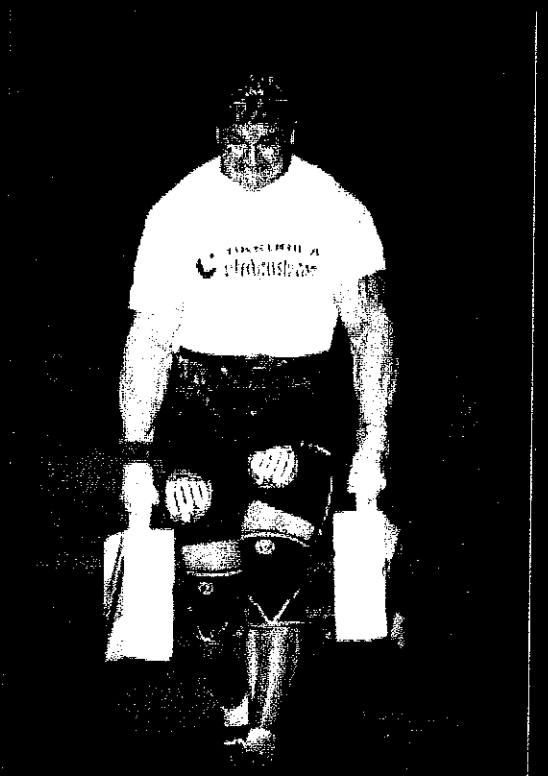
APPLIED STRONGMAN TRAINING FOR SPORT



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Certification Title

Applied Strongman Training for Sport – Theory and Technical

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Cover:
Three-Time World's Strongest Man, Marius Pudzainowski

About the authors:

Art McDermott attended Boston University, completing his BS in Education before continuing on for graduate work in Exercise Physiology. During this period, he became a 4 time All-American in Track and Field.

He has published numerous articles in strength-related magazines on a wide variety of topics.

At last count, he has participated in 23 National Championships in 3 different sports, attending the World Championships in both Track and Field (1990) and Scottish Highland Games (1999). He is the owner of the Poliquin Performance Center in Wilmington, Massachusetts.

Charles Poliquin is a native of Ottawa, Canada. While completing graduate studies in Exercise Physiology in Canada, Charles began coaching athletes, a career move that has resulted in Olympic medals in 16 different sports produced by athletes from 4 different countries.

Coach Poliquin has been hailed as one of the most successful strength coaches in the world. He has perfected the art of writing routines that produce results, and his books and courses are the culmination of his theories and knowledge.

Charles Poliquin has lectured extensively on practical and theoretical aspects of physical conditioning in eight different countries and in 3 different languages. Charles has also written over 500 articles for various web sites, magazines and journals. His work has been translated in 9 different languages; English, Swedish, German, French, Italian, Dutch, Slovakian, Spanish and Japanese.

He is the founder of the Poliquin Performance Centers which are found across North America.

Forward

All of the courses that make up modules within the Poliquin International Certification Program (PICP) are designed to require each participant be fluent with the concepts presented in order to actually be certified. Meaning, you had better know what you are doing if you intend to actually apply the ideas presented here to your athlete(s). Modified Strongman Training (MST) is a unique modality requiring extensive knowledge regarding the mental and physical limits of the population to be trained. It is imperative that the same thorough safety precautions be taken for strongman training that would be taken for any weight room session. It is also crucial that your athletes are physically capable of handing the implements to be used. Overreaching and/or improper technique with modified strongman training has the same potential for injury as any room exercise. Every strength coach needs to keep in mind the old medicine adage, "Do no harm."

The course content is quite extensive, with clearly stated objectives at the beginning of each chapter.

Table of Contents:

Chapter 1

Introduction to Applied Strongman Training for Sport

As strongman training, in a modified form, becomes more popular as a modality for athletic preparation, it becomes vital to understand why it works. It would have been appropriate to title this subject matter, "True Functional Training for Sport", but the term 'functional training' has been so widely overused and misapplied, that an incorrect association would have been unavoidable.

First, then clarifications are in order. Many coaches have blurred 'core' training and 'functional' training into synonymous terms. They believe that if you are training the musculature of the torso, specifically the abdominals and oblique, transverse abdominus, etc. that you are creating a better functioning athlete and therefore you are doing 'functional' training. This is not the case. By doing most 'core' training programs advocated, you are strictly strengthening the abdominals. While this is of key importance, it is only one aspect of the larger picture. Core training need not dominate the program design as is seen in many facilities, both private and institutional. Direct abdominal training need only be addressed periodically throughout the yearly cycle. With correct program design, coupled with proper technique, abdominal musculature is then adequately recruited by execution of the major strength movements and through sport participation itself during the remaining yearly cycle. A basic paradigm to follow is that the abdominals must be trained in an upright position to transfer to most sporting movements.

Functional training can be defined as the execution of movements directly related to the patterns required for a given sport, with the obvious intent of improving athletic performance. Hence, core training and functional training are far from synonymous

The ineffectiveness of some popular approaches in the "functional" preparation of athletes is due to several causes:

1) Most approaches to 'functional' training are inadequate in that the resistance often used is insufficient. Studies have shown that initial resistances below 60%, unless supplemented by accommodating methods such as heavy duty bands and chains, do not sufficiently stimulate muscle tissue to promote strength gains.
2) The patterns commonly employed seen in programs do not at all resemble "on field" conditions. Exercises done while propped upon physio-balls, wobble boards, thick padding, etc are best left to rehab work as there are very few competitive surfaces which move in such a manner.
3) The use of physio-balls, balance boards, light 'thera' bands, and other such devices, while generating some abdominal stimulation do not, in any way, produce a sport specific training effect. These tools have a useful place in the direct training of the abdominals and, again, as part of a rehab program, but have

limited use beyond this in any athletic preparation program. They are incapable of developing any 'usable' strength.

As a consequence of the programs designed using the above concepts, we are seeing a wave of remarkably weak athletes, with more than sufficient abdominal strength, but decreased overall strength levels, directly attributable to poorly designed functional programs.

The slogan for change could therefore be; "Abs and Rehab" with regard for the proper and fitting use for the ubiquitous physio-ball and its derivatives. Promotion for the use of the above mentioned tools beyond "abs and rehab" serves only to sustain an entire industry built upon the sale of "gadgets and gizmos". The belief that such items are necessary tools for actual strength and speed development has been successfully instilled upon the minds of coaches and parents everywhere. A stronger athlete, given the presence of well-developed sport technique, is a superior athlete. This is particularly true for contact sports. It is our belief that modified strongman training is a far more effective approach for attaining this 'usable' strength.

This coursework will address the use of the Farmer's Walk, Super Yoke, Log Press, Tire Flip and Pulling Sled, as well as their various combinations, as an athletic preparation modality. Their proper use is based upon the following concepts:

1) True functional training can only be achieved while using adjustable and significant resistance while executing sport-specific movements.

2) All of the exercises described here should be treated just like any major weight room movement such as the squat, power clean, overhead press, etc., with regard to progression, technique development, safety concerns, periodization and recovery.

3) The result of the proper application of modified strongman training results in "usable" strength, which will prove particularly valuable in contact sports such as hockey, football, rugby, martial arts, wrestling, basketball and others.

4) The use of these methods can be seen in two general forms; a) sports-specific, as has been mentioned and b) as part of a general preparation process for most sports.

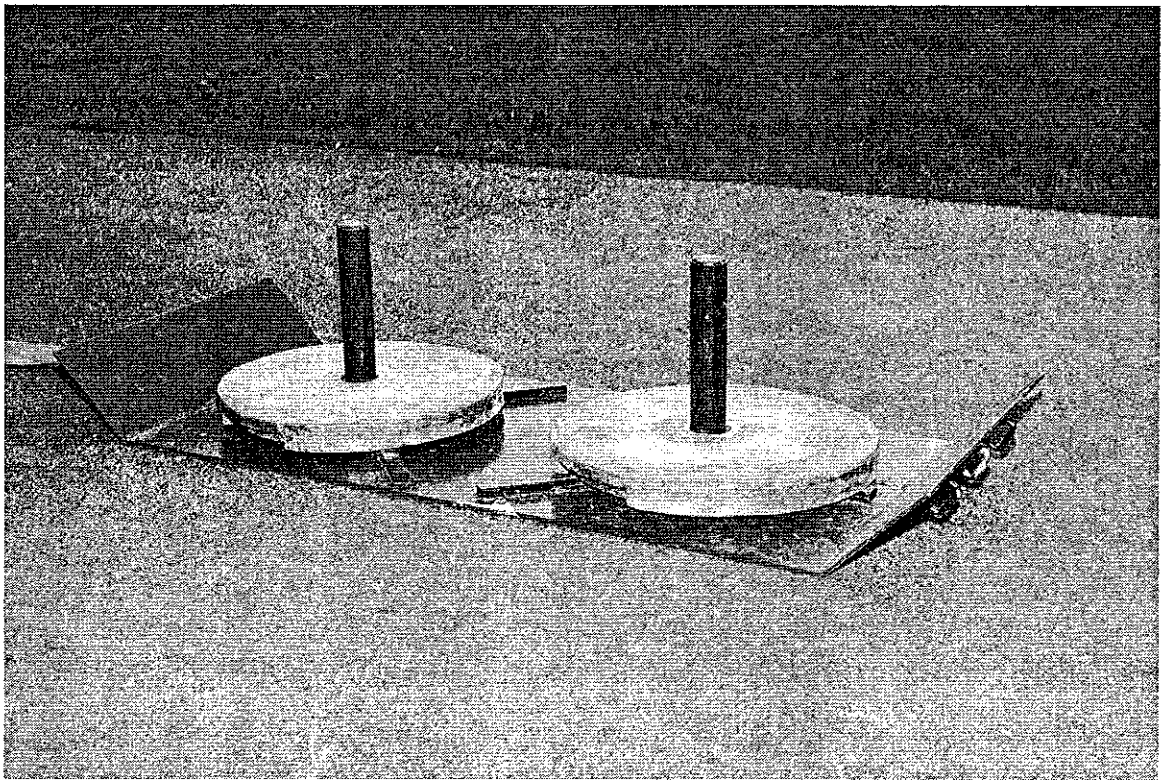
While little research exists involving these techniques, their slow and steady increase of use in major collegiate programs and professional settings is testament to their implied usefulness. Coaches at this level can ill afford to waste valuable preparation time with methods that have no efficacy. These tools can be seen the in preparation of teams at the University of Iowa, University of Nevada – Las Vegas, Arizona State University, for starters, as well as professional players in the NFL, NHL, MLB and a variety of Olympic sports. For example, current World Shot-put Champion Adam Nelson is a strong proponent of this type of training to maximize power.

Prior to implementing any of the routines or techniques described herein, it must be reemphasized that these movements are no more or less dangerous than any other demanding strength movement and, as such, require sufficient knowledge of technique as well as extensive awareness of safety issues.

Chapter 2: Sled Work

Objectives:

- Understand the equipment
- Identify the muscle groups worked
- Identify specific sports benefited from event
- Learn specific exercise options



This two post, reversible sled has all the simplicity and versatility of design needed for any surface or athletic population (Courtesy of Elite Fitness Systems).

Background:

The idea for the use of sled work for sports can be loosely traced to the Scandinavian forestry industry. Once a tree was felled, loggers would drag trees from the wooded areas not accessible by vehicles. Louie Simmons, powerlifting coach extraordinaire, brought sled dragging to the forefront by drawing this information from the Finnish powerlifters when querying them regarding their dead-lifting prowess. Some claimed that their background in dragging trees from logging employment provided them with a solid base of posterior chain development.

If we were dumped on a deserted island and allowed only one piece of exercise

equipment, it should be the sled, as virtually every muscle can be trained using this device.

Sled work is particularly useful to team sport athletes such as ice hockey, rugby, football, volleyball, American football, soccer, and basketball. The more resistance the athlete has to overcome in his sport, the more useful the sled. Therefore it is a strength tool of choice for the rugby and football player.

It has been our experience that sleds with a "dual runner" design do not adapt well to various surfaces. The steel, flat-bottomed design of the above sled from Elite Fitness will easily meet the needs of personal trainers, strength coaches and professional strength athletes.

Special Advantages:
Injury Rehabilitation

Sled work provides one the best forms of strengthening the vastus medialis muscles in a non-impact but progressively adjustable manner. Contrary to squatting, it can be done early in the rehab process. Forward and backward sled walking are more inherently natural movements than squatting, therefore they can be done shortly after orthopedic knee surgery, once medical clearance for any resisted movements is given.

Muscular Balance Diagnosis

Several of the exercises below can serve to provide outstanding feedback with regard to the muscular balance status of an athlete, or the lack thereof. For example, if an athlete is executing a Petersen Drag and consistently drags or pulls the sled off a straight line towards one side or the other, it can be an excellent indicator of a tight or too strong periformis, relative to the opposite side. Similar diagnosis for other muscle groups can be performed as well for muscle groups like the hamstring with 1 Arm Drags and others.

This diagnostic tool underscores the concept of "true" functional training. That is, the idea of executing "real world" movements again adequate resistance.

Functional Hamstring Work

Even though leg curls and various forms of deadlifting, pulls and good mornings can develop an excellent base of hamstrings strengthening, sled work will permit the athlete to transform that base into useable strength on the sports surface.

Lateral Speed

In our opinion, sled work is the only valid method that will improve lateral speed

in a dramatic fashion. The strength coach must realize that lateral speed is almost always expressed in a situation where inertia has to be overcome, hence the need for load. No amount of speed ladder training can match the results of sled work.

The Korean short-track speed skaters use the dragging of tires to improve skating power. Using a sled permits one to have a more gradual and quantified increase in resistance. We use it extensively with NHL players and Olympic speed skating medalists, with very appreciable results.

The sled is the only practical tool that can overload hip adduction and abduction patterns in a positive functional way. The more commonly used bands placed around the ankles or legs are inadequate because there is no quantifiable way to measure or increase resistance in controlled increments.

Energy system work

Many of our pro athletes use sled work as their form of energy system work for their sport-specific preparation. The following four energy systems can be trained using the sled:

- anaerobic alactic power
- anaerobic alactic capacity
- anaerobic lactic power
- anaerobic lactic capacity

Footwear

For hamstrings and backward dragging, because of the loads involved, hiking boots are the footwear of choice. For lateral work, we feel that best results are achieved with plain sneakers or tennis shoes, to force the athlete to stabilize the ankles.

The preferred surface will minimize friction so the load can be more closely controlled by plate loading verses estimates of surface friction. For example, an asphalt or concrete surface works ideally.

General Technical points

The sled provides innumerable options for exercises, namely:

forward facing,
backwards facing,
hands together V grip,

hands separate rope grip,
waist belt point of contact
ankle point of contact
single arm versions, etc.

Because of the specific nature of each exercise and the versatility of the sled, there are no universal technical points that apply to all sled work. Even the grip used to hold the straps is not universal. The grip should be specific to the sport being trained. If a given sport has a strong grip component, such as hockey or wrestling, then emphasis should be placed on requiring a more active grip on the strap as opposed to a passive loop attachment around the wrist. (See photos).

Exercises:

Petersen Drags

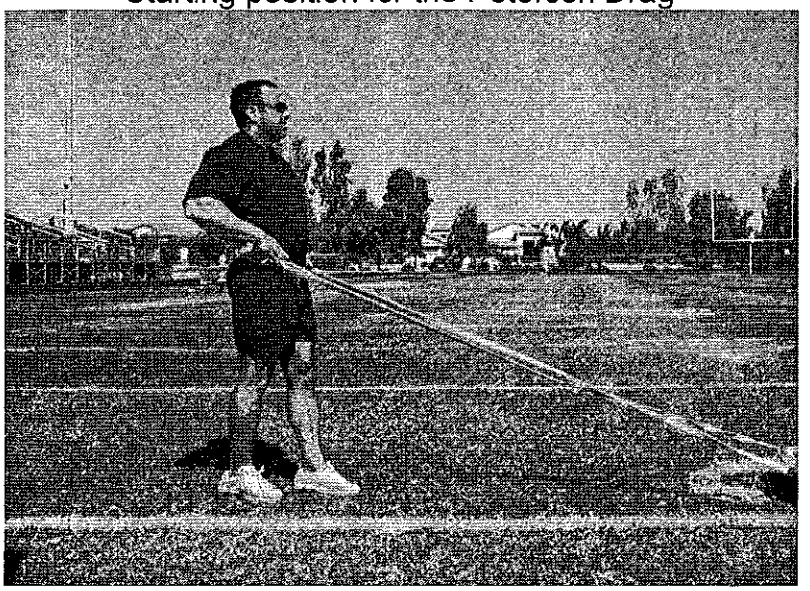
This is the sled variation of the Petersen step-up (see below for a full description) used in rehabilitating the vastus medialis muscles. Some people prefer to call this the moonwalk drag. It is also a great exercise for athletes who need to re-balance their knee tracking because of overwork of the vastus lateralis such as alpine skiers, speed/figure skaters and hockey players.

Description/steps:

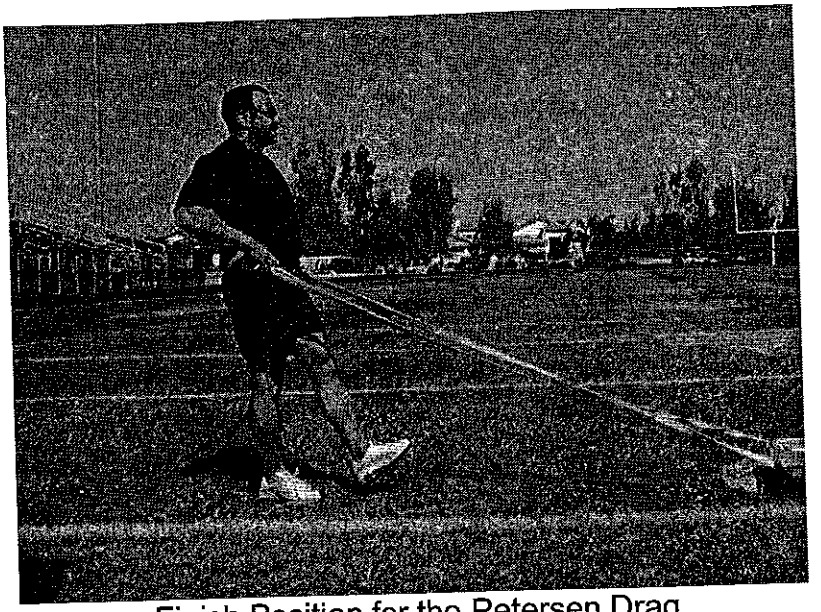
- Stand facing the sled holding one handle per hand. Nylon straps with sewn-in loop handles will work best here.
- Place the ball of the right foot just behind the left heel so that there is a slight bend in the right leg at the knee. The heel should be lifted to as steep an angle as possible.
- The foot must be turned out at a slight angle, roughly 15 degrees.
- Apply downward and forward pressure with the ball of the right foot to break inertia of the sled.
- Emphasis should be placed upon driving the right heel to the ground as rapidly as possible coupled with an equally rapid extension of the right knee and foot.
- The left foot comes off the ground passively.
- Once the right foot is completely flat on the ground, place the ball of the left foot just behind the right heel.
- Apply downward and forward pressure with the ball of the left foot to break inertia of the sled.
- Continue alternating between the right and left foot until the prescribed distance is covered.

- This exercise and be done with the handles held in the hands or with a waist attachment as seen below. There will be superior quad recruitment with the waist attachment however.

Starting position for the Petersen Drag



Midpoint position for the Petersen Drag



Finish Position for the Petersen Drag

Note: The range of motion is very short. The most common mistake is to take too big a step, which turns out to be the next exercise: the Backwards Drag

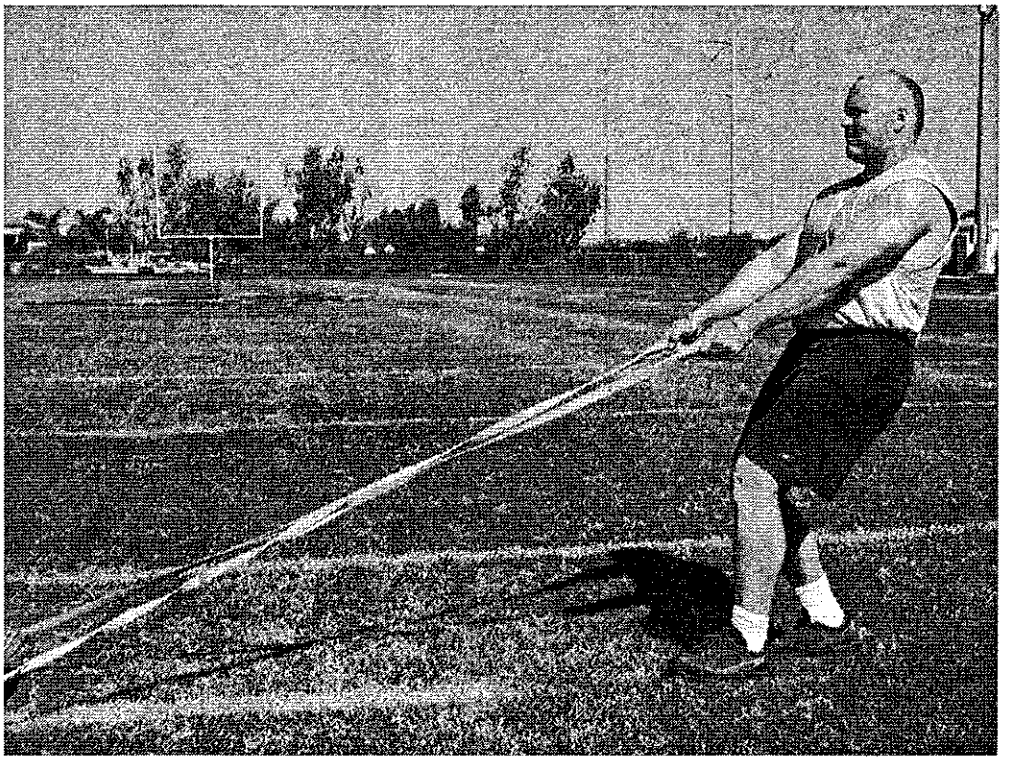
Important Technical Points for the Petersen Drag

- The trunk of the body must remain as upright as possible at all times, if the trunk leans back excessively, the resistance is too high, and many other muscles other than the vastus medialis are being recruited.
- Always wait for the sled to be immobile before initiating the action of the subsequent step.
- There is no need to execute this movement in a rapid fashion. Properly reset after every repetition.
- This movement is generally limited to an 'accumulation' or strength building phase.
- This exercise should always be done with the passive grip around the wrist to promote focus on the vastus medialis without loss of neural drive to the forearms.

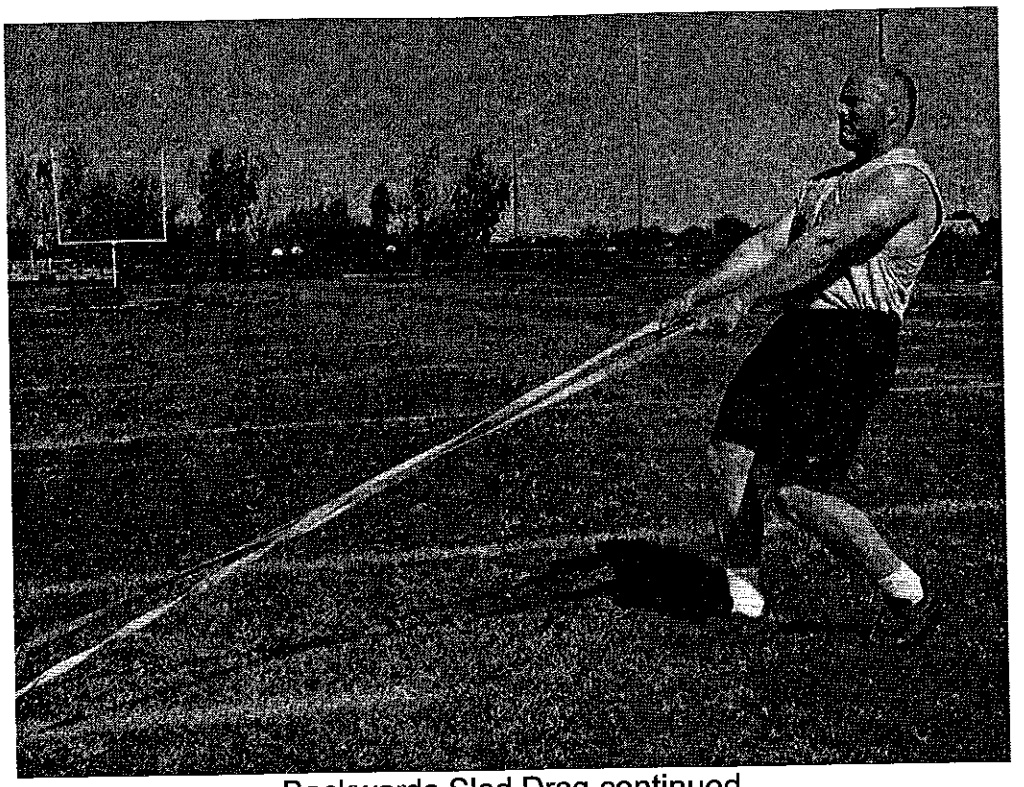
Backwards Drags

Description/Steps:

- Stand facing the sled with one handle in each hand. Nylon straps, a waist attachment or V grip handles may be used here.
- Lean the torso back slightly.
- Drive back forcefully with one foot and then the other in an alternating pattern.
- Avoid an turnout of the toes of either foot, which usually indicates excessively tight lateral hamstrings.
- With lighter loads, it is possible to stay on the toes (quadriceps/gastroc focus), but heavier loads will require a toe to heel pattern for the feet (posterior chain focus).
- It is important to keep the upper body "quiet" rather than use an exaggerated swing of the shoulders to gain momentum.
- Move the feet as rapidly as possible over the prescribed distance.
- If a waist attachment is used, the upper body mass can no longer counter the sled weight and hence the entire load is focused upon the quadriceps. This significantly increases the difficulty of the exercise.



Standard Backwards Sled Drag position



Backwards Sled Drag continued

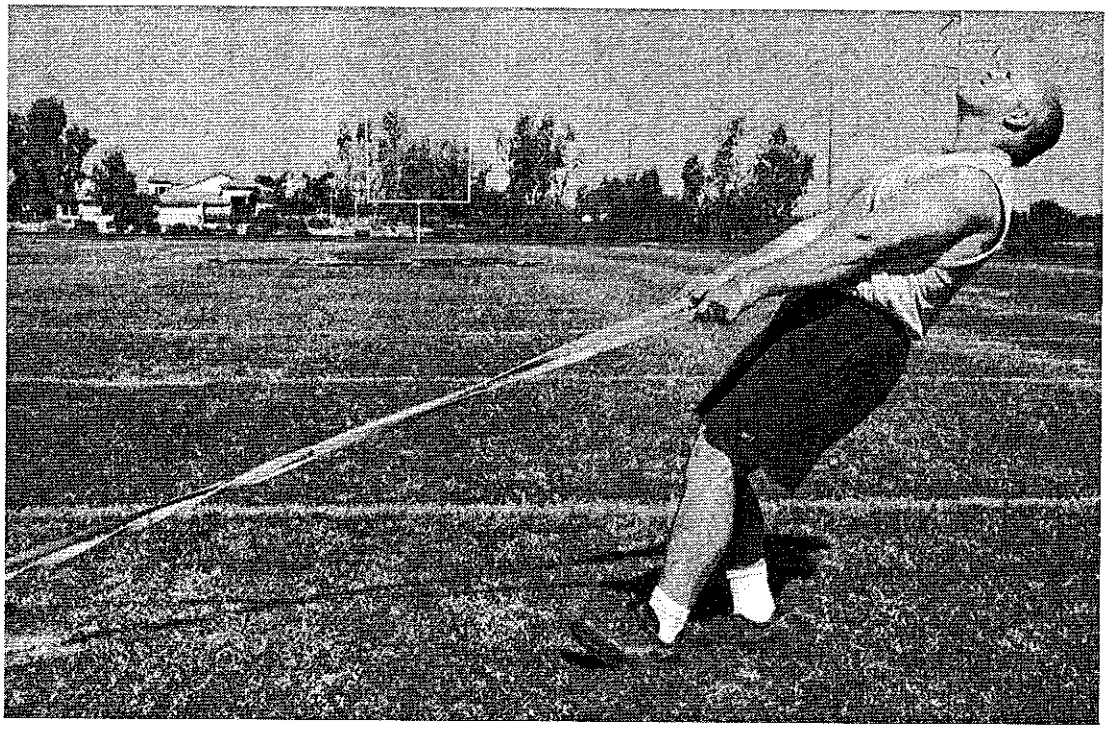
The Backwards Sled Drag with waist attachment is preferred if superior quadriceps isolation is desired.

Note: In our experience, there are very few exercises capable of generating high lactic acid levels and muscular fatigue as rapidly as backwards sled dragging. As a consequence, this exercise should always be placed at the end of the workout, if possible. Refer to the end of this chapter for appropriate sets, reps and distances, etc.

Nose to Sky Backwards Drags:

Description/Steps:

- This is performed in the same manner as the standard backwards drag, but with the head tilted back, looking straight upwards.
- Attention should be paid to driving through a firmly planted heel.
- Emphasis is almost entirely on the vastas lateralis and the posterior chain.



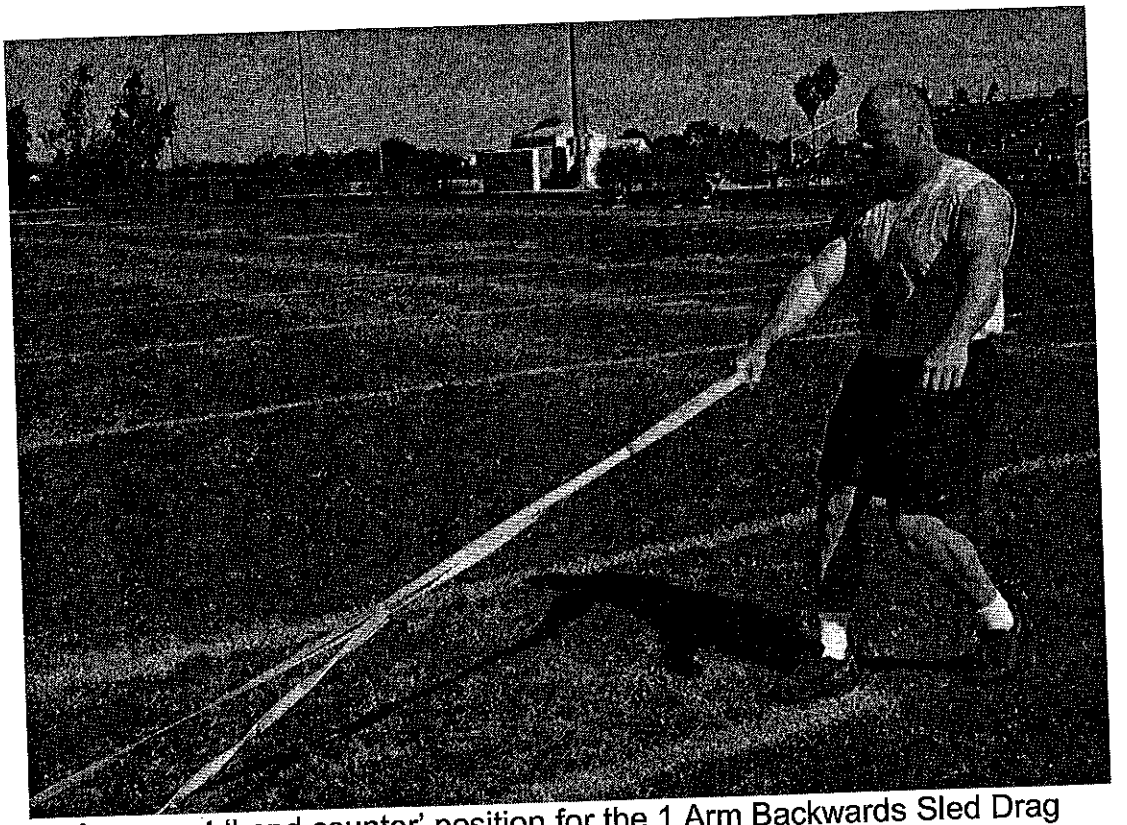
Nose to Sky position, with heel drive emphasis

Single Arm Backwards Drags

Description/Steps:

- Use the same body positioning as the regular backwards drags, but only one hand should be in contact with a handle.
- This hand may have both straps in it or be gripping only one side of a V grip handle.

- The free hand should be on the hip. It should not be used to gain momentum through unnecessary movement or as a counter balance. This would defeat the purpose of a unilateral movement.
- Move the feet as rapidly as possible over the prescribed distance.
- This technique forces asymmetrical compensation of the torso muscles, which mimics many of the unilateral situations seen under competition conditions such as throwing a ball or virtually any striking or hitting sport.
- Athletes will note superior torso/hip stabilizer recruitment on the side of the body opposite the one holding the handle; most notably the contra-lateral oblique, quadratus lumborum and gluteus medius.



Incorrect 'hand counter' position for the 1 Arm Backwards Sled Drag
The free hand should remain on the hip.

Bent-over Hamstrings Drags

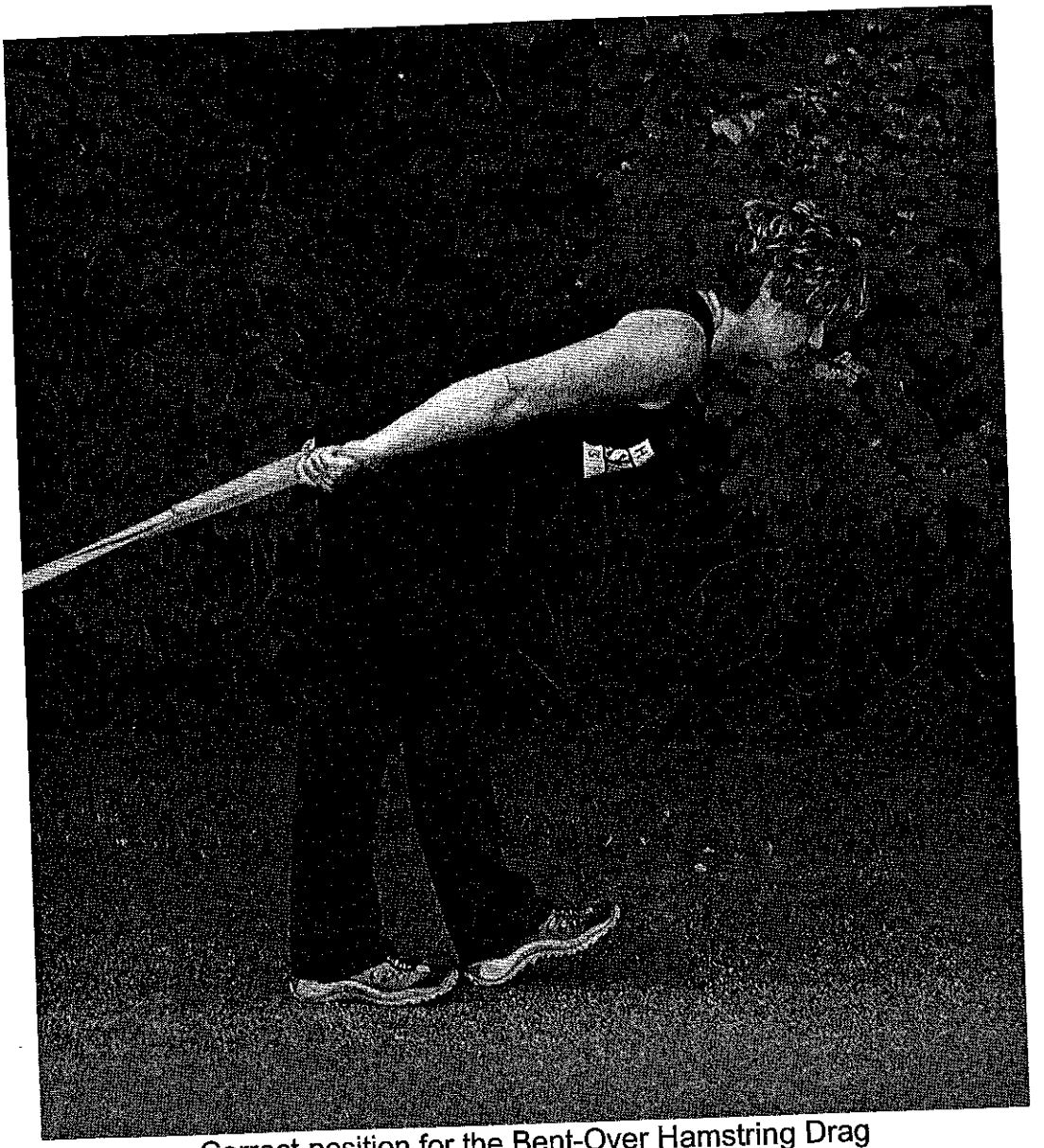
Both of the hamstring movements described below can very effectively be combined in a "super set" or alternating fashion with leg curls to assure complete hamstring recruitment.

Description/Steps:

- A Louis Simmons original
- Stand facing way from the sled, holding one handle/strap per hand, with

arms running along either side of the body.

- Bend forward at the waist until the trunk is parallel to the ground keeping a slight arch in the lower back.
- Walk forward for the prescribed distance.
- Without a doubt, this is one of the best hamstring builders out there, hence making it an excellent posterior chain strengthening exercise.
- Every attempt should be made to prevent the knee from bending in this exercise, although a slight knee bend is unavoidable during the push-off and recovery point of the stride.
- The leg is brought forward by using the hip flexors in what is described as a "Frankenstein" walk.
- Effort must be made not to swing the legs out to the side when pulling either leg forward into the next stride.
- The athlete should be cued to attempt to walk a straight line in a rapid heel-to-toe fashion.
- The coach must make certain that no excessive shoulder movement occurs during the exercise.



Correct position for the Bent-Over Hamstring Drag

Single Arm Hamstring Drag

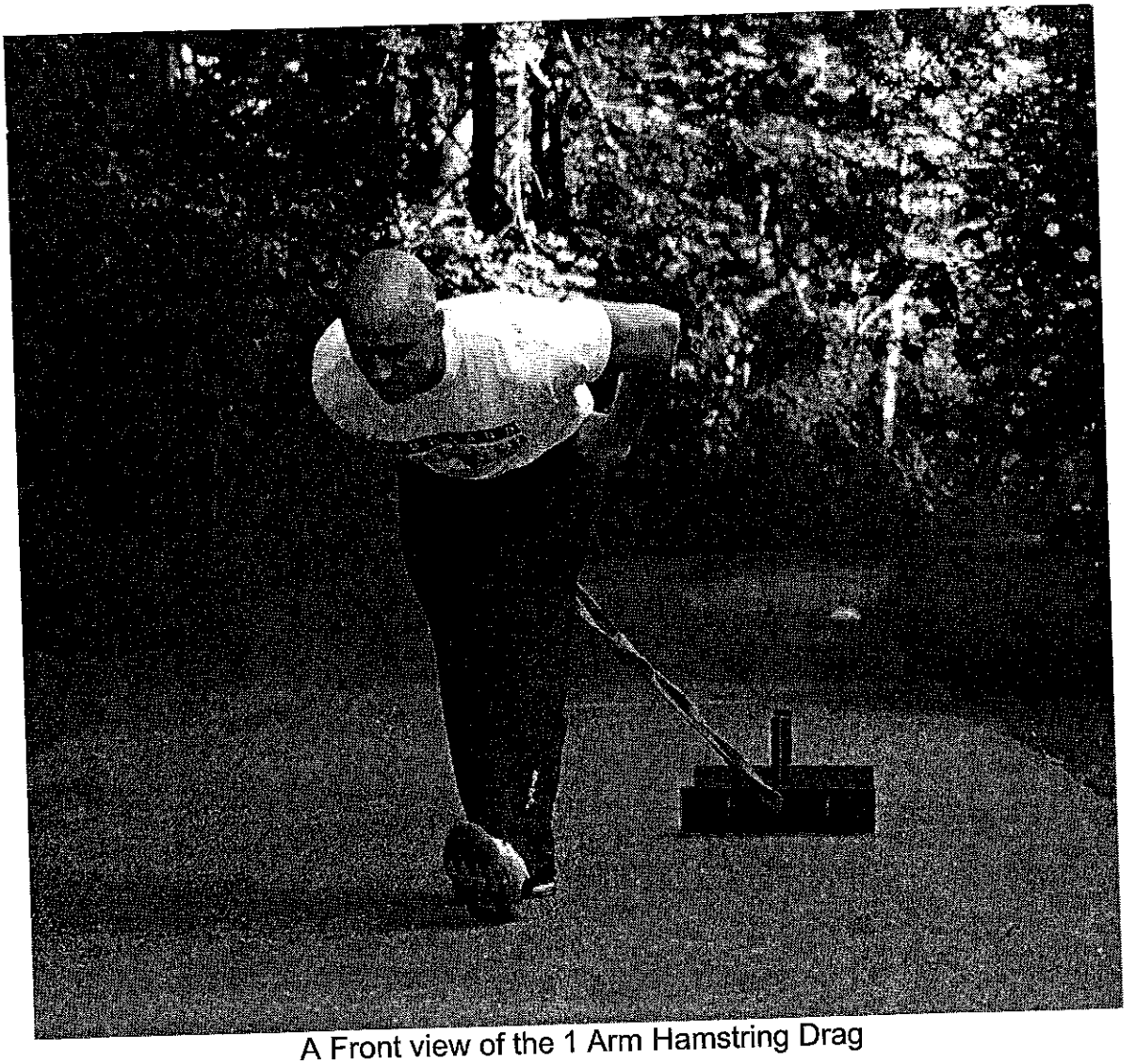
This exercise is quite possibly the best unilateral isolation movement for the hamstrings.

- It is performed with the same torso position as the standard hamstring drag, but only one arm holds the sled strap attachment.
- The 'free' hand must remain fixed on the hip or with the thumb looped in the waistband or even in the same side pocket. This is crucial in order to maintain the unilateral quality.
- The athlete is forced to focus on maintaining a fixed body position, keeping the feet in line with the straight ahead direction of the

movement

- Unlike the Single Arm Backwards drag, this movement focuses the load on the ipsilateral, or same side leg.
- The most commonly seen error with this movement is external rotation of the opposing leg in an attempt to recruit the glutes for added assistance. The coach must make certain the opposite side foot and leg remains facing forward.
- NOTE: It is quite easy to exceed the sufficient load on this movement. If a straight forward alignment of shoulders, hips and legs cannot be maintained, the load must be reduced.

Correct position for the 1-Arm Hamstring Drag



A Front view of the 1 Arm Hamstring Drag

Upright Sideways Ankle Drag

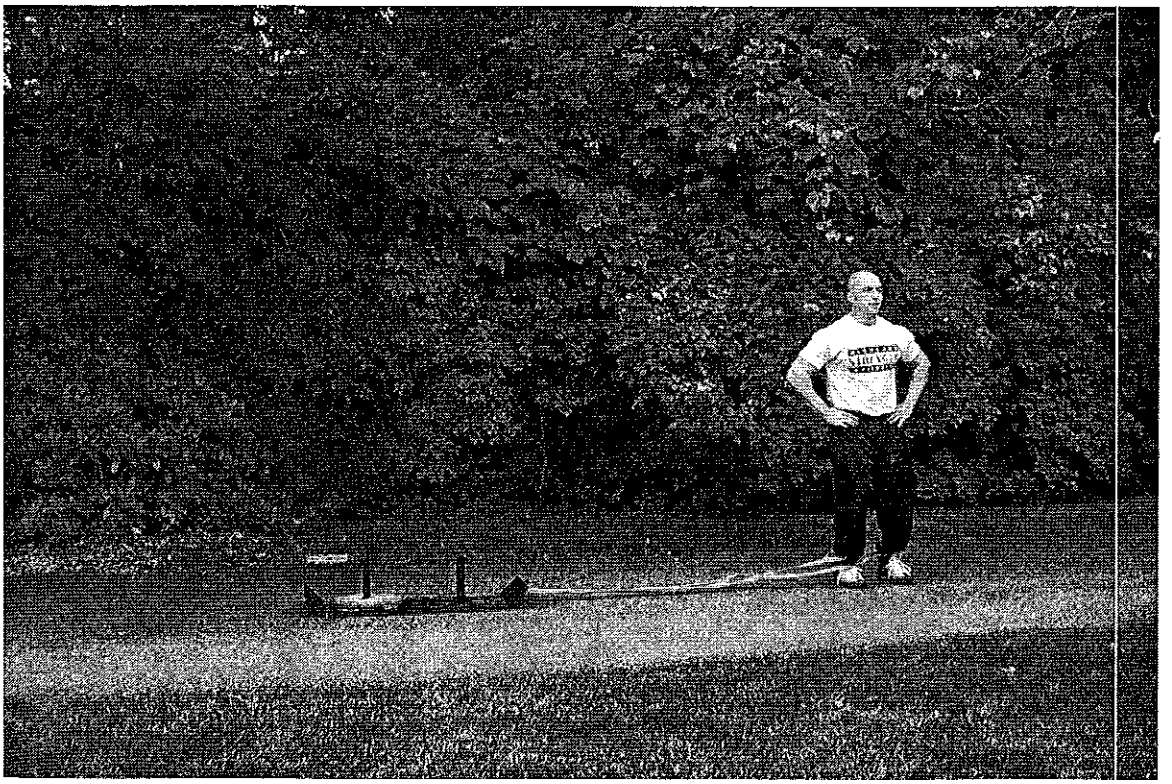
All sideways dragging movements are strongly recommended for hockey goalies, tennis players, basketball players, football linemen and linebackers where rapid lateral movements are vital.

Description/Steps:

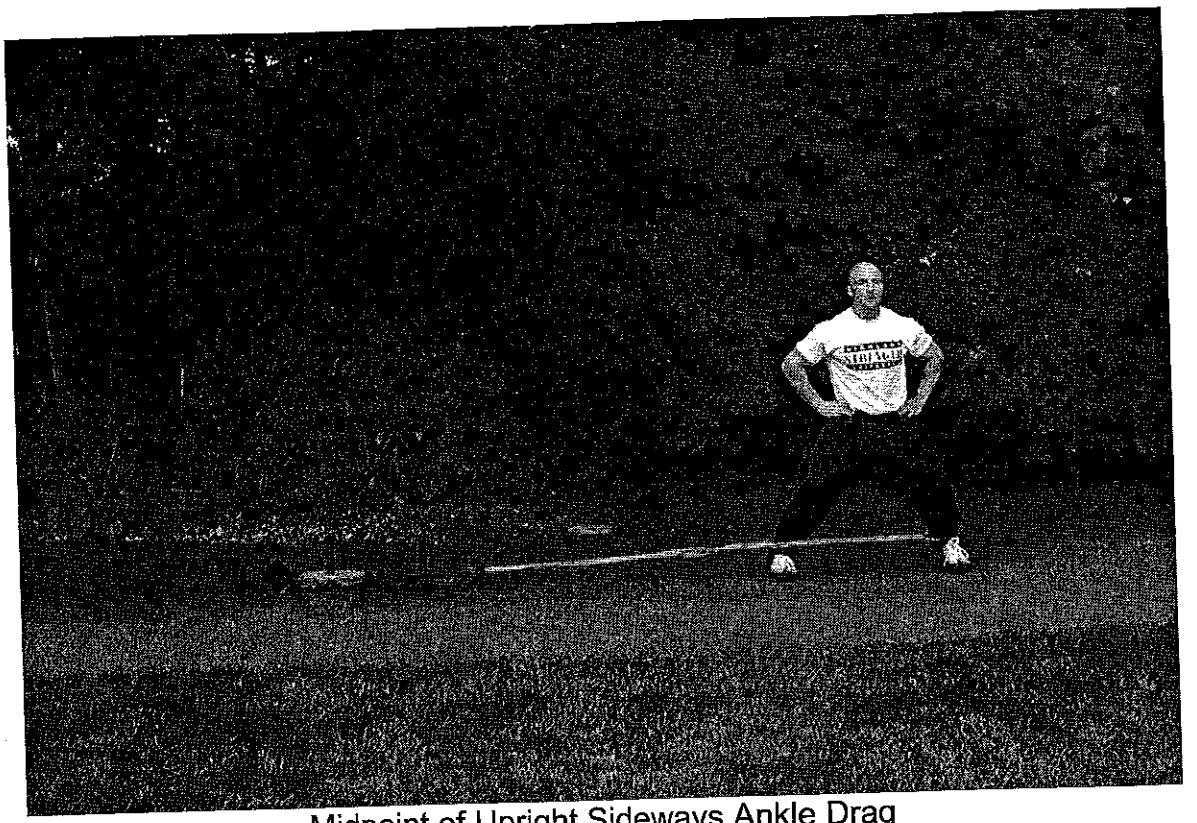
- By using either an ankle cuff with a clip or by forming a nylon strap loop, fix the straps to the ankle.
- Make certain a protective layer of cloth or sock is between the nylon and the skin.
- Bend the knees slightly while facing perpendicular to the sled.
- Push the lead leg, that being the leg facing the direction of movement, out

as far as is comfortable and then pull the trail leg back under the body to the original starting position.

- It is important not to lift the lead leg up into the air and "press" the leg forward as this uses an entirely different set of muscles. This is the most commonly seen execution error. An effective auditory coaching cue is to instruct the athlete to "hover" the feet only inches from the surface of the ground.
- The toe of the lead leg *must* be turned inward in a pigeon-toed manner. This will activate the abductors directly.
- Stay low in the shuffle or an athletic "ready" position, move the feet as rapidly as possible over the prescribed distance.
- Most athletes and coaches will have seen this exercise at some point in the past, usually done with a rubber band. The sled is preferred here due to its adjustable nature.



Starting/Finishing position for Upright, Sideways Ankle Drag

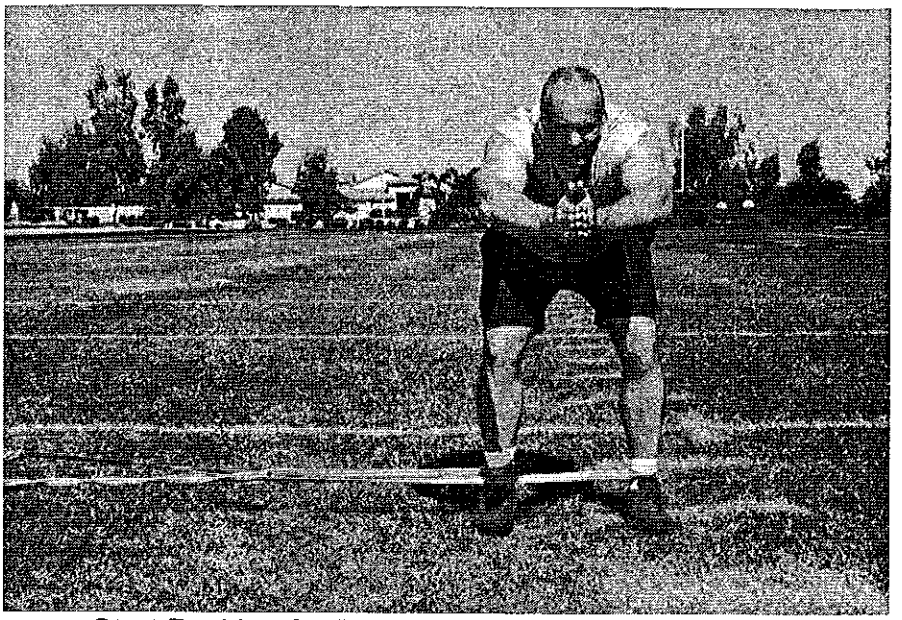


Midpoint of Upright Sideways Ankle Drag

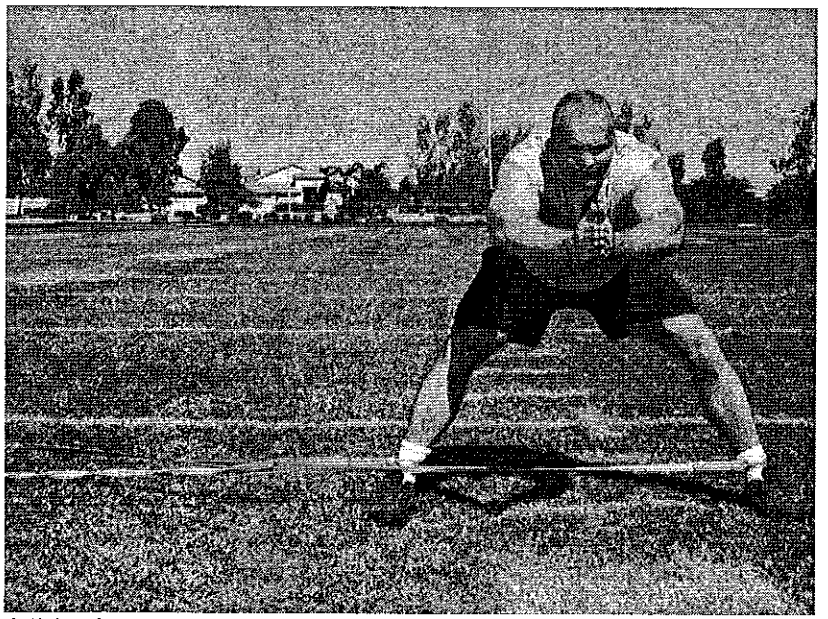
Variations:

Bent Over Sideways Drag

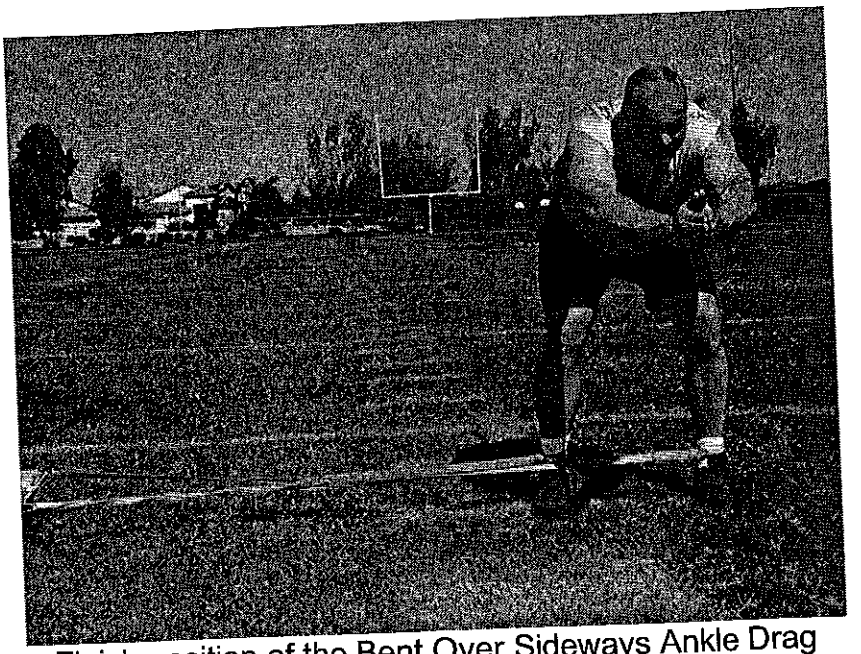
- This is a variation of the previous exercise, the only difference being that the athlete is bent forward at the waist until the trunk of the body is nearly parallel to the ground. This position increases the isolation of the adductors and hence the difficulty of the exercise.



Start Position for Bent Over Sideways Ankle Drag



Midpoint position of the Bent Over Sideways Ankle Drag



Finish position of the Bent Over Sideways Ankle Drag

Sideways Sled Drag with hand hold

- Using the same foot pattern as above, the athlete holds the straps in the hands as opposed to having them fixed at the ankles.
- Resistance must now be translated through the torso.
- While it is less intensive on the hip ab/adductors, it does work the important torso muscles responsible for lateral changes of direction.
- The "lead" arm should have the strap in hand and remain bent at the elbow at a 90 degree angle, in a position flat against the torso.
- The trailing arm should be fully extended towards the direction of the sled.

Starting/Finishing position of the Sideways Sled Drag with hand hold

Mid-position for hand-held Sideways Sled Drag

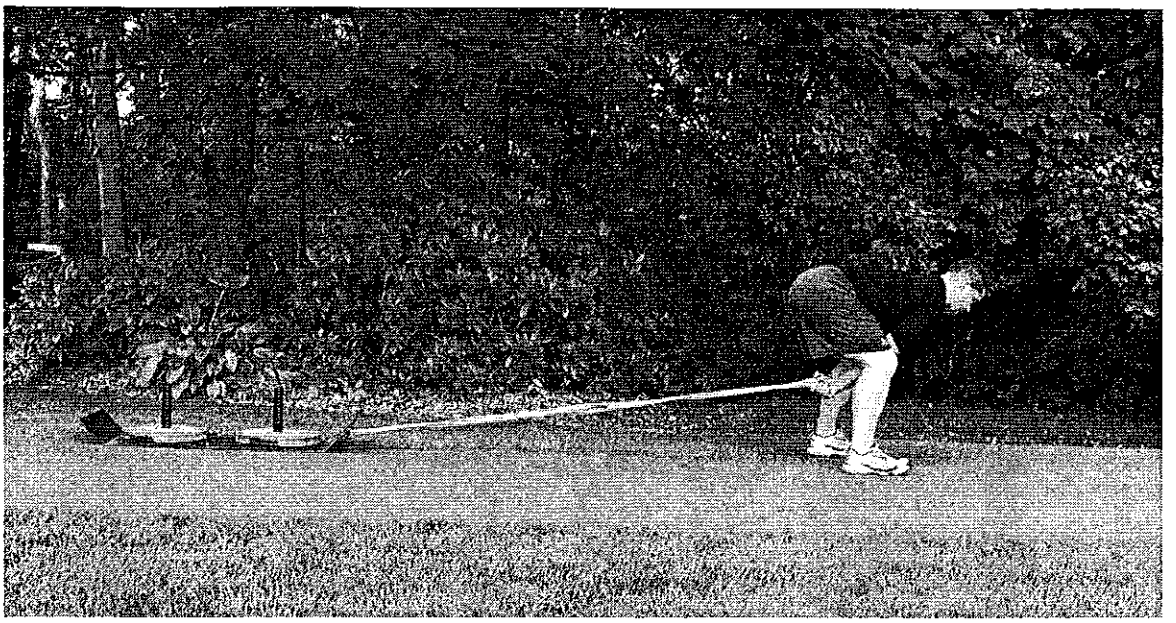
Cariocas

- This old football favorite goes by several different names, crazy legs or grapevines, to name a few.
- Use only a very light load here as the tempo is quite fast, ideally with only one leg in contact with the ground at any given moment.
- If the speed of the movement drops to a plodding motion, the exercise should immediately cease and load reduced before continuing.
- Move as rapidly as possible over the prescribed distance.
- This movement should only be used during a strength building or accumulation phase.

Pull-throughs arched-back

- This exercise is another Louie Simmons movement.
- It is an outstanding exercise for developing explosive starts by focusing on the hips and lower back from a dead stop.
- Stand facing away from the sled, holding one handle per hand.
- **The athlete should straddle the straps.**
- Bend forward at the waist until the trunk is *at least* parallel to the ground keeping a slight arch in the lower back.
- When the nylon strap is pulled tight, the elbows should be at a position even with the inside of the knees.
- From this position, forcefully stand upright by firing the hips though to full extension. Do not use the biceps and/or deltoids as primary movers here.
- The hands should remain in very close contact to the front of the body at the end of the concentric movement. The most common error seen here is to use the arms to pull the load forward. The coach should cue the athlete to use the arms only as an attachment to the sled, nothing else.

Note: Make sure someone is standing between the athlete and the sled to decelerate it as it comes near the ankles, particularly during warm-ups. Once the training weight has been selected correctly, this should not be a problem, and the sled will stop short of the ankles at the end of the pull-through.



Flat back position for the Arched-back Pullthrough

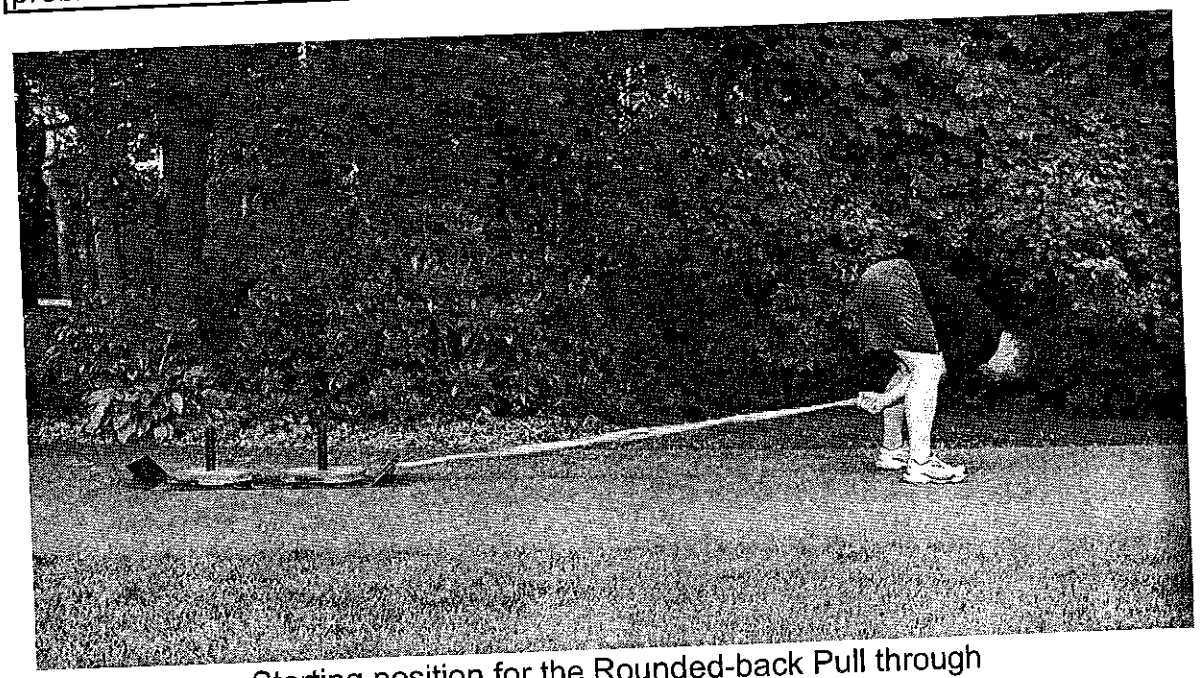
Finish Position for both the Arched-Back Pull through as well as the Rounded-Back Pull through below.

Pull-throughs round-back

Description/Steps:

- This is a variation of the above meant to develop explosive starts.
- Because of the rounded back position, the erector spinae tend to take a greater percentage of the load.
- Stand facing away from the sled, holding one handle per hand.
- Straddle the straps.
- Bend forward at the waist while rounding the back.
- Bring the feet as far forward as possible so that the athlete is bent over at the waist as far as flexibility allows.
- The further the hands can reach back between the legs, the better the range of motion.
- The elbows should be adjacent to the knees at the very least.
- From this position, come upright as rapidly as possible while moving the hands forward.
- It is important not to use the biceps and deltoids as primary movers here.
- The hands should remain as close as possible to the body at all times.

Note: Again, it must be emphasized that a spotter stand between the athlete and the sled to decelerate it as it comes near the ankles, particularly during warm-ups. Once the training weight has been correctly selected, this should not be a problem as the sled should stop short of the ankles at the end of the pull-through.



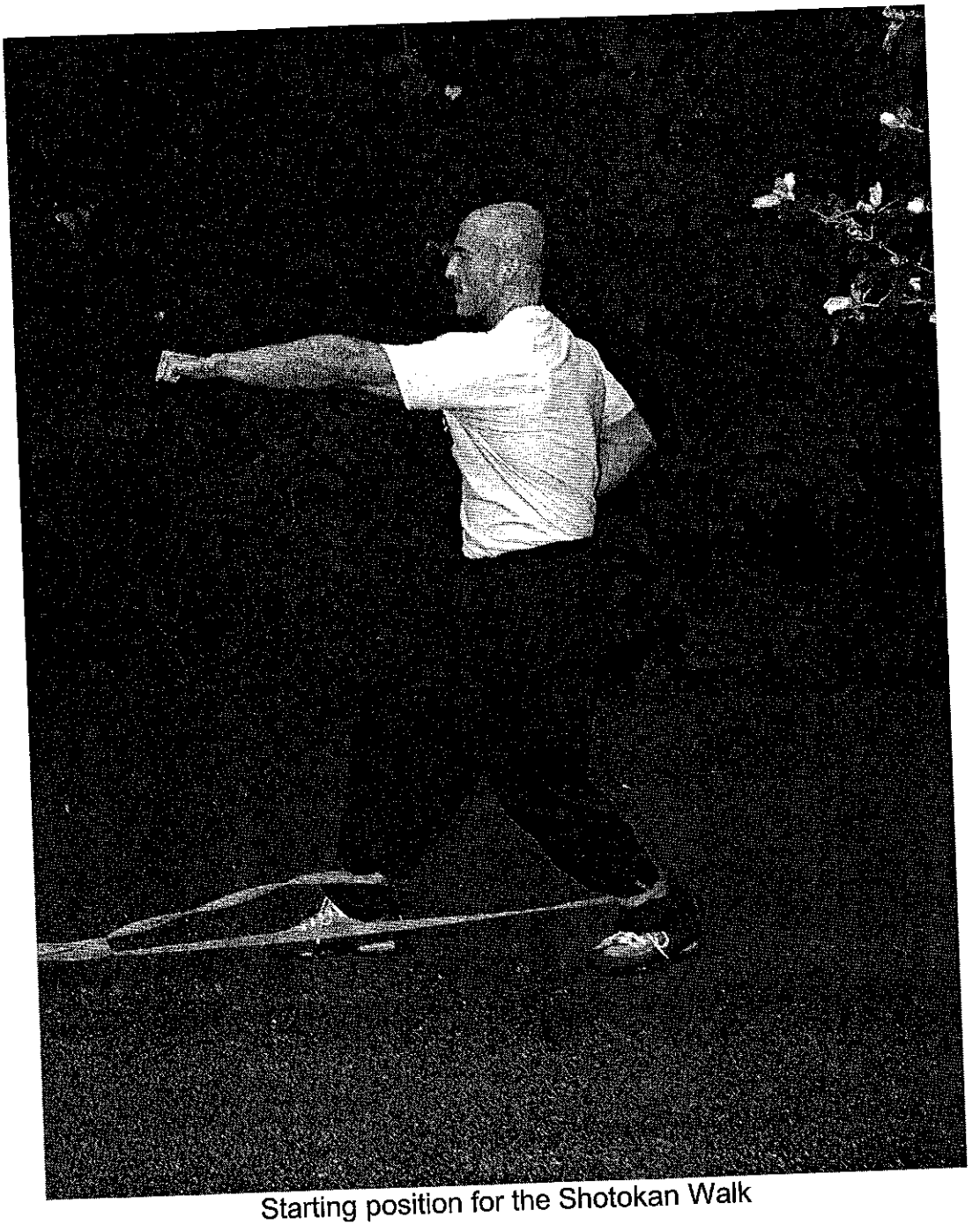
Starting position for the Rounded-back Pull through

Shotokan Backward Walk

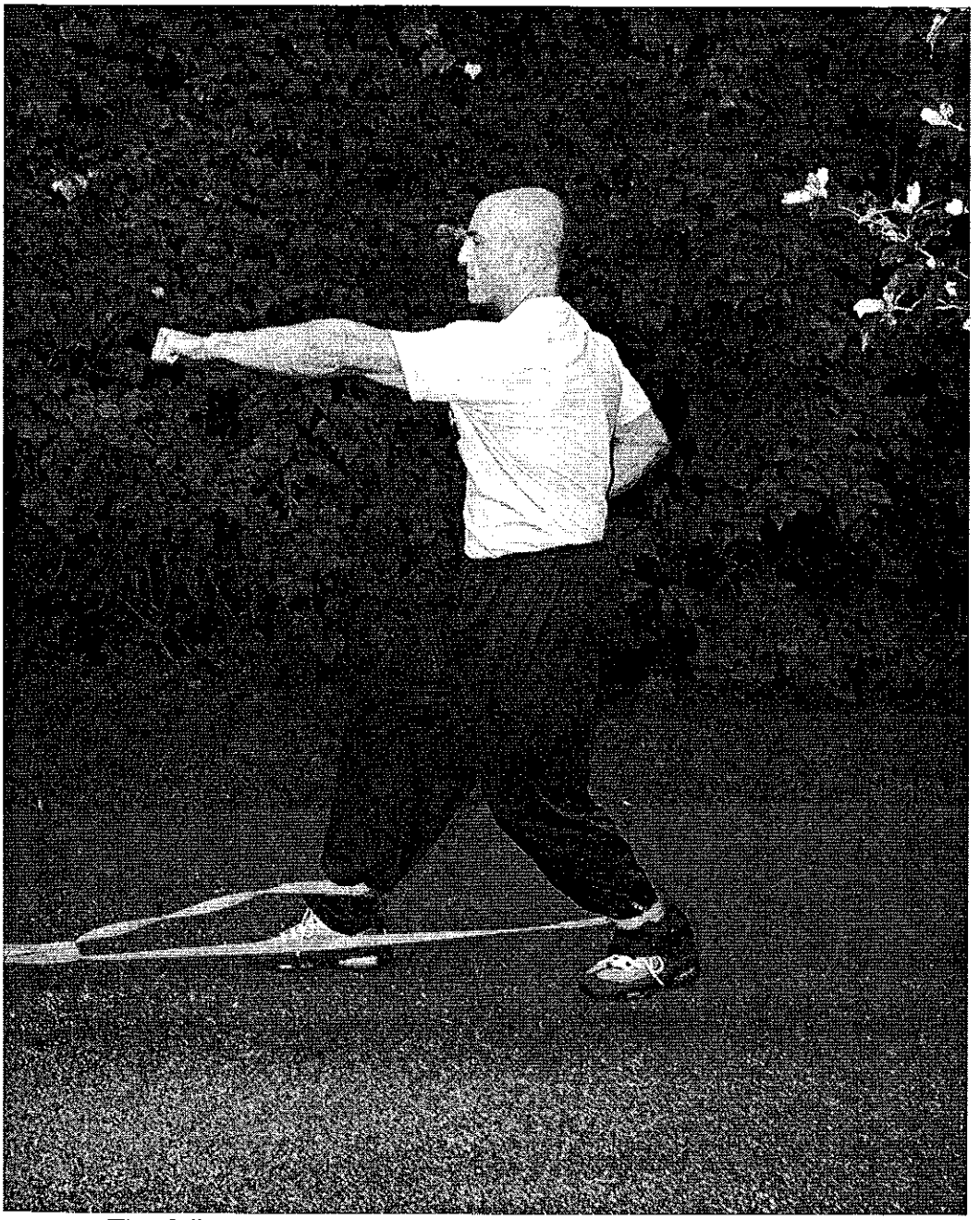
- This variation requires a bit more coordination than most of the other

exercises described here.

- The exercise aims at working the hip extensor chain.
- Face the sled, with the ankles set in each looped stirrup.
- Extend the right leg back, while the right arm is extended in front.
- At this point the straps should be taut.
- Begin the exercise by moving the left leg back, while simultaneously extending the left arm forward in a punching type movement and pulling the right wrist back towards the waist.
- This movement would be extremely difficult to replicate with any other form of resistance.



Starting position for the Shotokan Walk



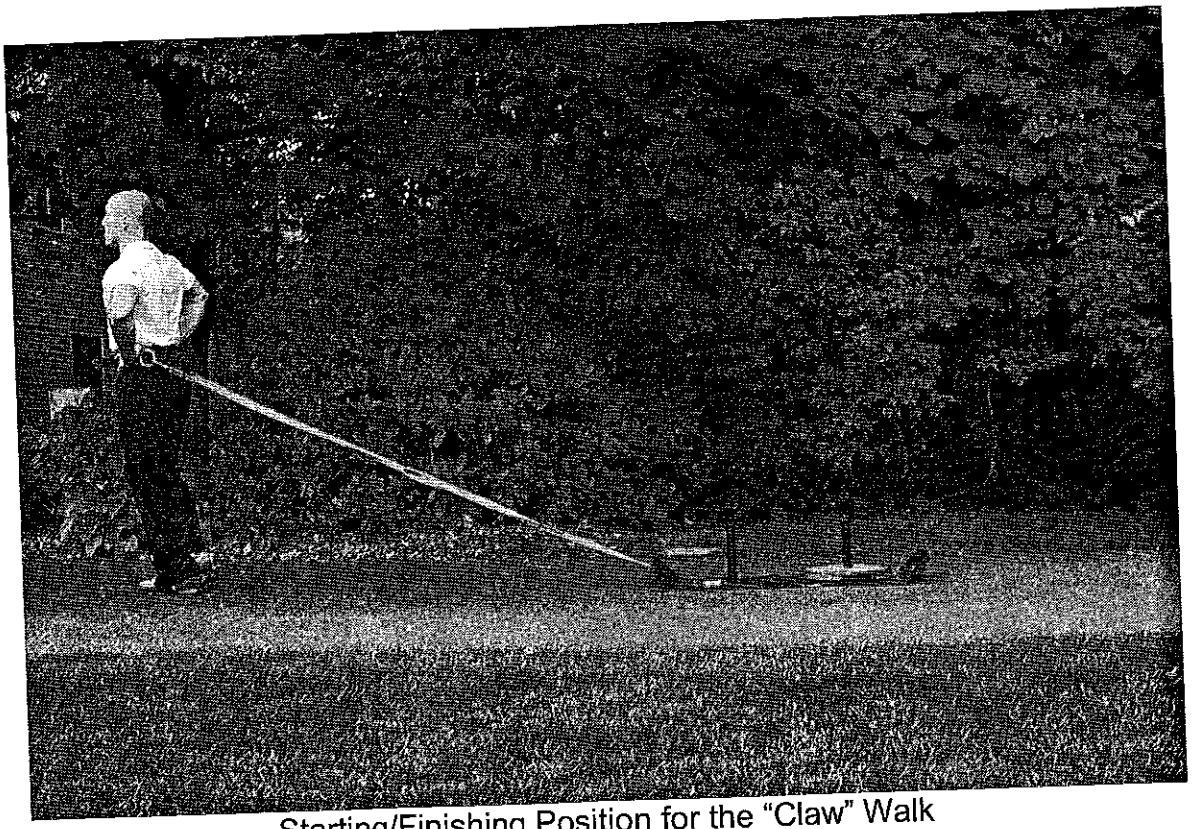
The follow through punch and step for the Shotokan Walk

"Claw" walking

Description/Steps:

- This outstanding glute/hamstring exercise can be thought of as an exaggerated form of lunge walking.
- Stand facing away from the sled with a handle in each hand and the hands down at the side.

- While bending the right knee, lift this leg up so that the thigh is above parallel to the ground.
- Then extend the knee and reach out forward as far as possible with the leg.
- Once the leg contacts the ground in a long lunge position, use only the hamstrings/glutes of the forward leg to pull the body forward and return to and upright position with the feet together.
- Repeat with the left leg.
- Be sure to come to a complete stop between repetitions.
- This exercise can also be done with a waist attachment.



Starting/Finishing Position for the "Claw" Walk

High knee lift position for the "Claw" Walk

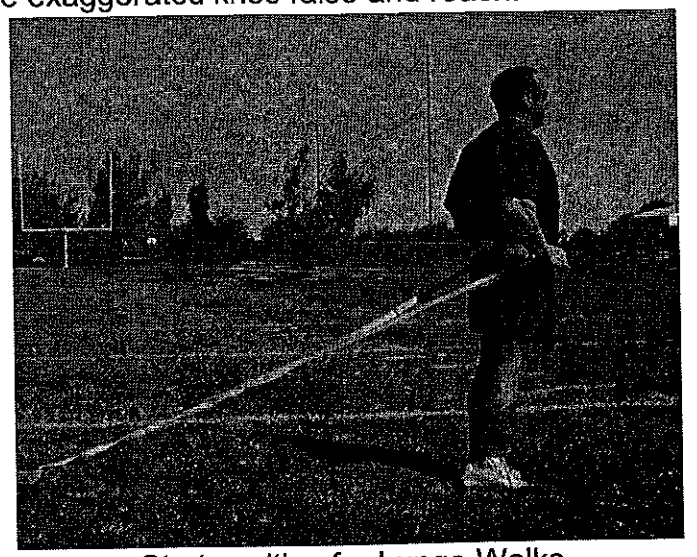
Extended knee position for the "Claw" Walk

Deep lunge position for the "Claw" Walk

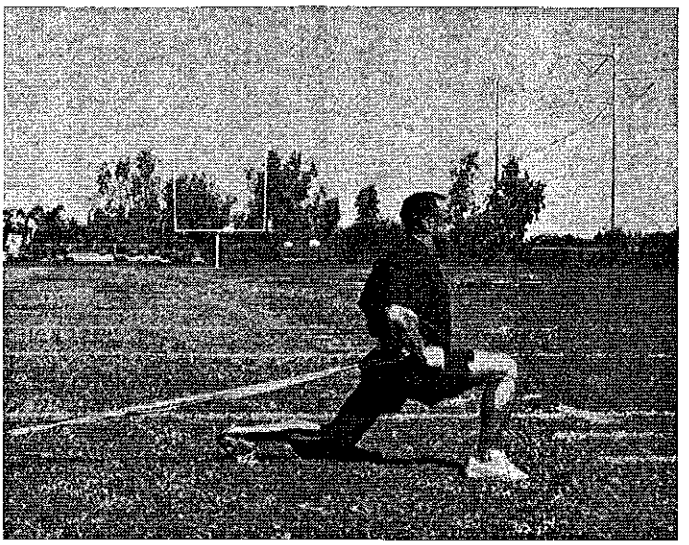
"Lunge walking"

Description/Steps:

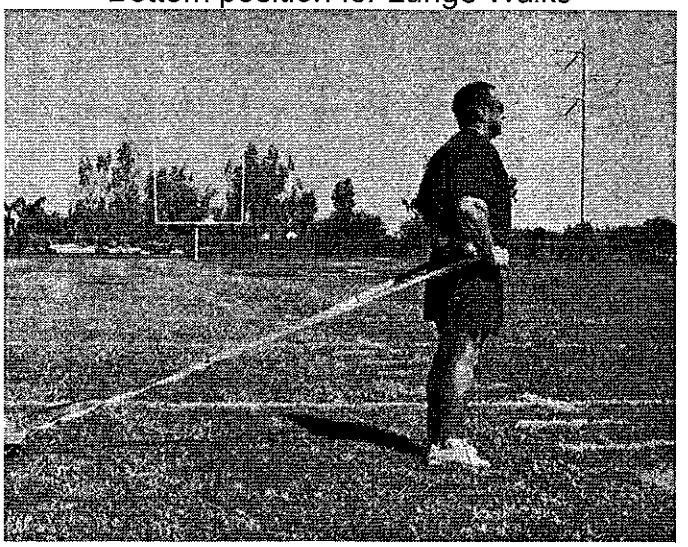
- Same as above but with a simple reach forward with the forward leg without the exaggerated knee raise and reach.



Start position for Lunge Walks



Bottom position for Lunge Walks

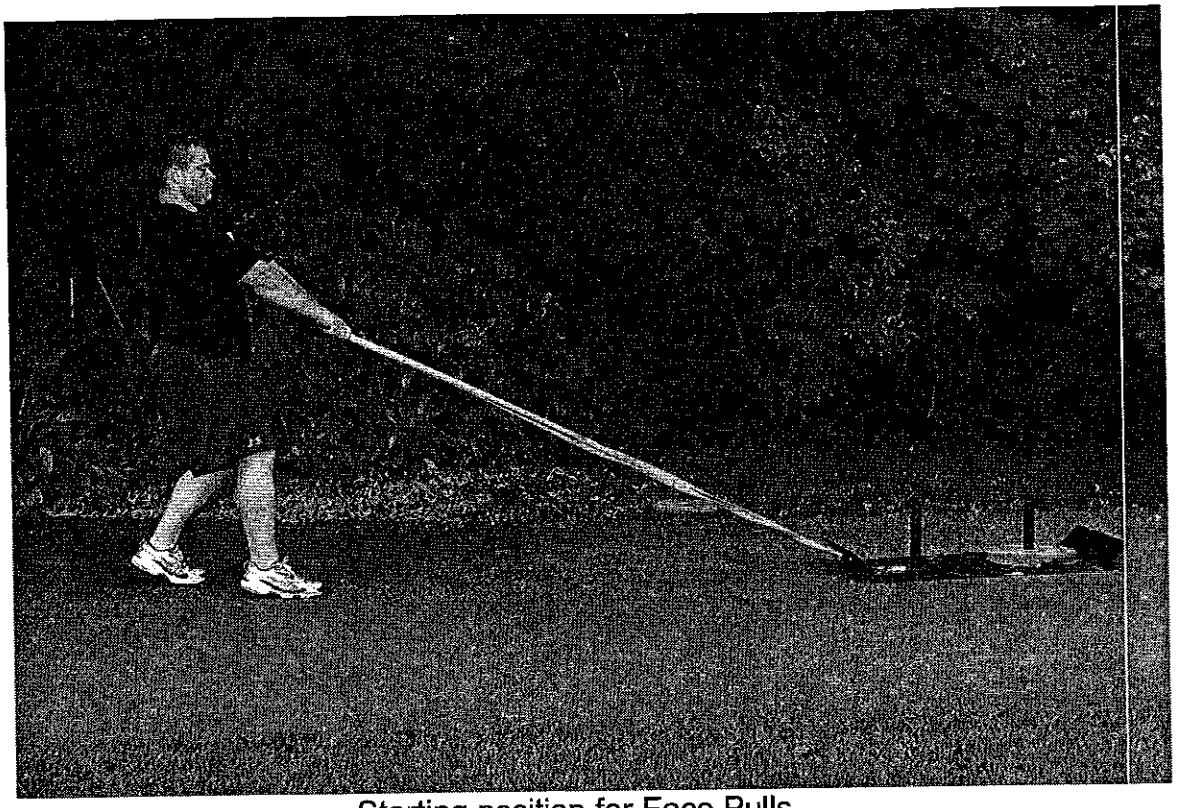


Finish position for Lunge Walks

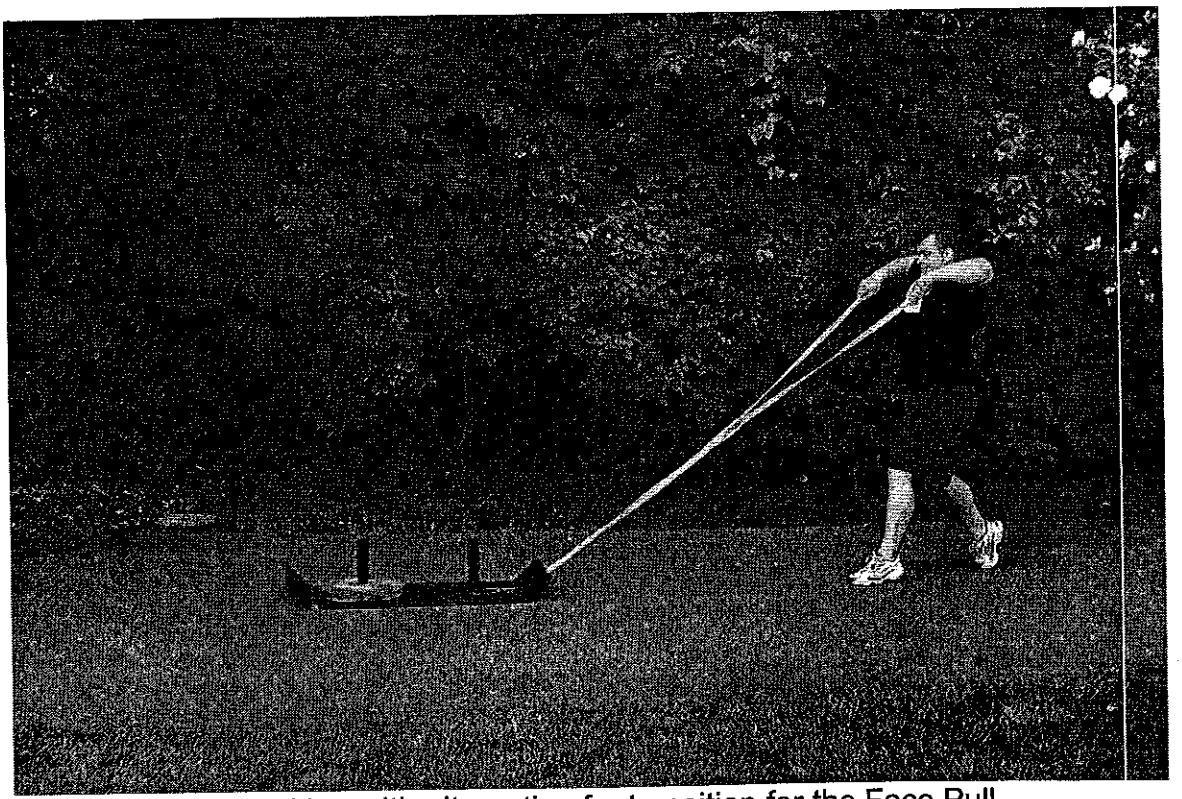
Step back and face pulls

Description/Steps:

- This movement is used mainly by grappling sports participants.
- Stand facing the sled holding a handle in each hand
- Start with the feet offset
- Step backwards using the right leg while pulling explosively on the straps in a rowing motion towards the face
- Repeat the pattern by alternating with the left leg.



Starting position for Face Pulls



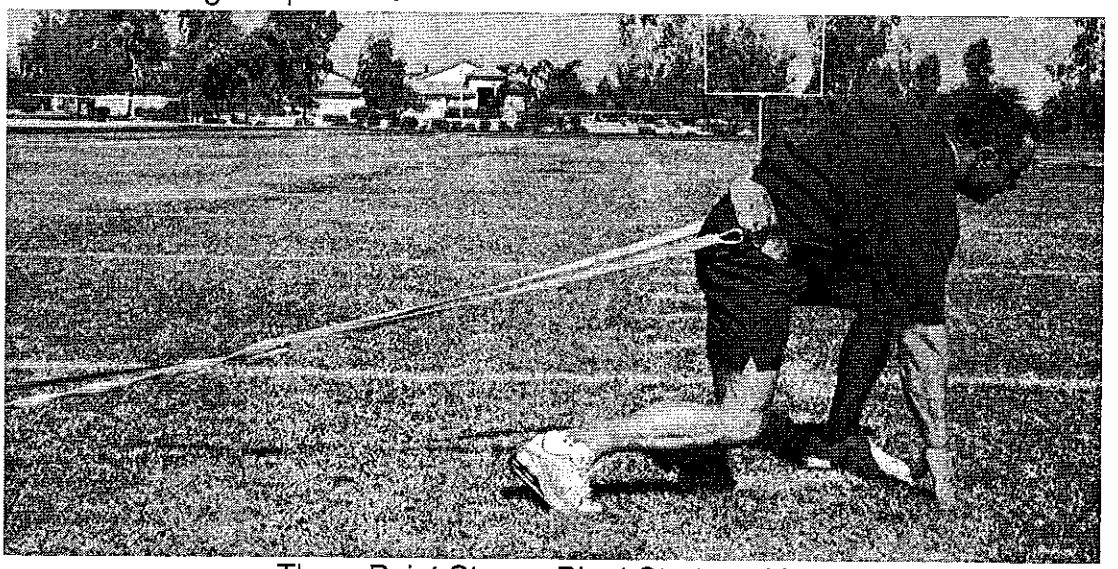
Finish position with alternating foot position for the Face Pull

Blast Starts

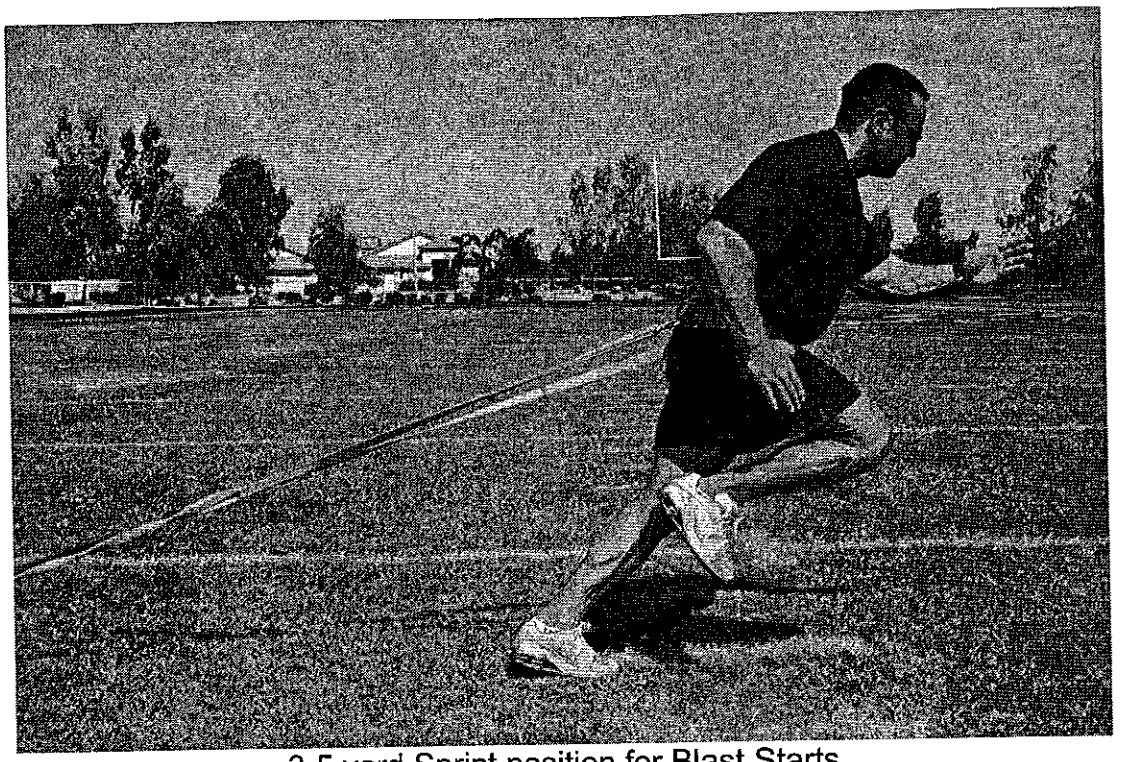
- This exercise should only be done by "non-skill" football position athletes, and by throwers, powerlifters, Olympic lifters, and martial artists.
- Sports requiring refined sprinting skills such as track and field sprinters, running backs, corner backs, and receivers should stay away from this exercise as it will disrupt their running mechanics.
- **Sled sprints should be a definite NO-NO for anybody who needs to run at high velocities.**
- Some conditioning coaches promote what is referred to as the "10% rule", saying that 10% of body weight should be the maximal load when sprinting with the sled. This rule is widely applied to sprinters and skill position athletes regularly. We strongly argue that sprinting with any resistance will compromise running mechanics and to introduce improper motor patterns.
- **Sled sprinting should only be applied to sports/positions in which sprinting technique are not a concern.**

Description/Steps:

- Attach a weighted sled to the athlete at the waist.
- The athlete then assumes a three or four point stance.
- On the signal, he sprints forward as explosively as possible for a distance of 5-10 yards or meters.
- This movement can be used quite effectively in 'cluster' form, where maximal blasts are done with rest period of only 15 seconds and sets not exceeding 5 repetitions.



Three Point Stance Blast Start position



3-5 yard Sprint position for Blast Starts

As an example, with football linemen a long series of downs would be duplicated in the following manner:

- Execute 12 consecutive 10-yard blast starts with 30 seconds rest between repetitions.
- Repeat this sequence multiple times with 5 minutes rest between sets.

Blast Starts Upright Start

Description/Steps:

- Same exercise as above but with a standing start.
- This start will increase the difficultly of the exercise because the line of force is further away from the horizontal direction of pull.
- This is the preferred option for throwers and martial artists who must display rapid acceleration in a more upright position than linemen.

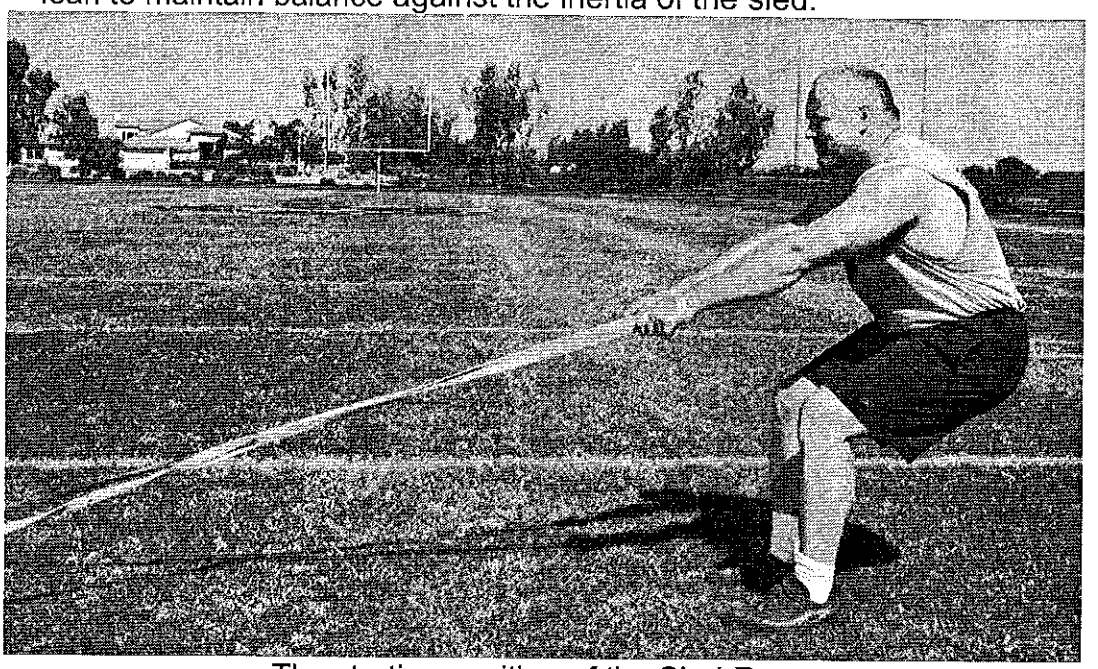
Sled Rows

Description/Steps

- This exercise is an excellent variation of the standard low cable row.
- It forces the athlete to stabilize against the ground forces acting in the

opposing direction of the pull.

- The athlete grabs the nylon straps (straps are preferred because they allow a more natural line of pull verses the close grip handle).
- The knees are bent and the back is kept flat.
- The athlete then forcefully pulls hack on the straps, focusing on squeezing the shoulder blades together and pulling the arms to either side of the rib cage.
- At the same time, the hips must extend in order to create the necessary lean to maintain balance against the inertia of the sled.



The starting position of the Sled Row.

Finishing position of the Sled Row.

Strength Ratings

These figures completely depend on ground surface and type of sled being used, therefore, we cannot recommend normative data on that topic. This is the only event for which we cannot recommend specific standards due to equipment and environmental variations. As a rough guideline, however, here are some ranges for training on a hard surface such as asphalt with a "standard" flat sled such as the Elite Fitness (Louie Simmons) model. These ranges apply only to backwards drags, hamstring drags and pull-throughs. The weights prescribed refer to the total weight of the sled and its contents. All other exercises and low-level recovery work will use lighter loads.

Note: One fact that should be noted right away is that these numbers imply that the athlete should be able to use roughly the same load for hamstring drags and pull throughs. All athletes should be within 15-20% of the appropriate weight used for the backwards drag. The inability to do so may be an indicator of a muscular imbalance in the hamstrings.

Approximate weights for backwards sled drags. Surface friction and sled variety will effect these figures significantly. These figures do not apply to rubberized

surfaces.

Smaller females – 150-200 lbs
High School males and female strength athletes– 200-350 lbs
Collegiate males – 350-500 lbs
Pro athletes and male strength athletes – 500# and above

Routines & Progressions

Sample A:
This routine was prescribed to Dallas Drake of the St-Louis Blues by Charles Poliquin, in a phase where he needed extra leg work in the evening to regain hypertrophy following knee surgery.

1. Warm-up (any specifics for this needed?)

2. Set 1

- Petersen sled dragging 6 x 50 yards,
- Pressure is put on the ball of the foot.
- Rest 5 minutes between sets.

3. Rest:

10 minutes break: P.N.F. stretching

4. Set 2

- Backwards pulling (lean back 45 degrees, apply pressure with heel of foot.
- 4 x 100 yards
- 4 minutes between sets.

5. Warm-down + static stretching

Sample B
This routine was given to Jim McKenzie, Stanley Cup winner, enforcer,(sorry, role player) of the New Jersey Devils

1. Warm-up

2. Set 1

- Side dragging 6 sets x 60 yards x 2 sides:

- pull 60 yards leading with left
- pull 60 yards leading with right.

Rest 5 minutes between sets.

3. Rest:

10 minutes break: P.N.F. stretching

4. Set 2

- Step back and face pulls
- 4 x 80 yards
- 4 minutes between sets.

5. Warm-down + static stretching

Sample C:
This routine combines the farmer's walk (as discussed in Chapter 3) and sled work. It was used by Jerry Ostrowski, Offensive lineman of the Buffalo Bills

1. Warm-up

2. Set 1

- Farmer's Walk even carrying 6 x 100 yards
- Minimum weight 150 lbs per hand
- .Rest 5 minutes between sets.

3. Rest:

10 minutes break: P.N.F. stretching

4. Set 2

- Nose to sky pulling (lean back 45 degrees, apply pressure with heel of foot.
- 5 x 100 yards
- 4 minutes between sets.

5. Warm-down + static stretching

Energy System Work

The following combination exercise can be adjusted to match the appropriate execution times of virtually every energy system, from under 20s to over 2 plus minutes.

Sled Drag Combo:

This example would be applicable for a Hockey and Lacrosse accumulation phase.

1) Using the standard Nylon loop handles, start with Hamstring Drags as described above. Drag for 40 yards or 40 meters.
2) No rest
3) Once the sled crosses the designated finish line, immediately turn around and move into a Backwards Drag.
    i. Note: The loops do not need to be removed from the hands. The athlete simply steps over the strap attached to one of his hands, turns the sled around and should be in the correct position to begin the backwards drag.
4) Execute the Backwards Drag for the same distance.
5) Rest 180-225s or 3 times the total time to completion. More advanced athletes may be able to tolerate a 120-150s rest period.
6) Repeat sequence 6 times for intermediate level athletes. Increase number of reps as work capacity allows.

Total time to completion should be between 60-75 seconds. This particular combination produces very high levels of lactic acid in a short period. The full length of the quadriceps and hamstrings are recruited, as well as considerable calf involvement. This is an outstanding choice for lower body local muscular endurance.

Chapter 3: Farmer's Walk

Objectives:

- To understand the qualifying equipment dimensions
- To learn the muscle groups used and the specific sports benefited
- To learn the variations of exercises used in the event

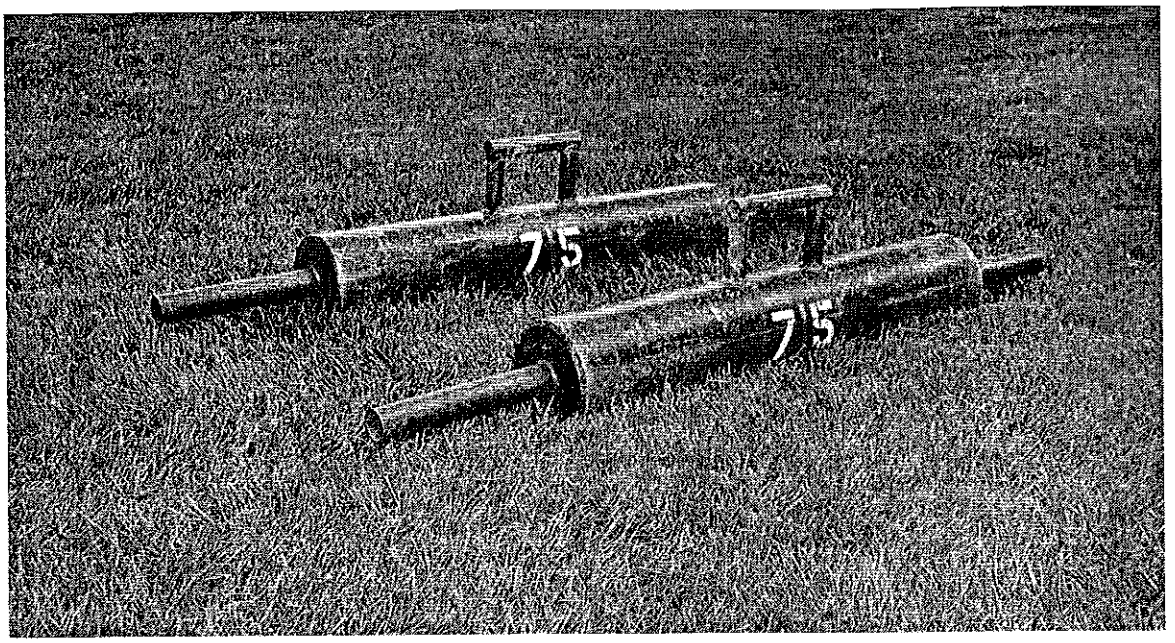
Background:

The farmer's walk (FW) has the longest history of all the events covered in this book. Its origins go back hundreds of years to agricultural Scotland. In that time, it was very common to have numerous tests of strength at local festivals and fairs. The name alone indicates these roots, although it has been said that most farmer's would likely have more sense than to perform this event unless absolutely necessary. Today's apparatus are usually quite well balanced and therefore, fairly easily controlled. Original versions of the event were likely made of stone, as seen the famous Dinney Stones of Scotland. There were extremely unwieldy and therefore considerably more challenging than the majority of apparatus seen today.

The current "World Record" is officially held by Hugo Girard of Canada. He carried two 175 kilo implements over a 25 meter course in just over 21 seconds! This was made all the more difficult by the fact the he was competing on a grass surface, which requires significantly more effort. Although consistency among course length, implement design and weight used make direct comparisons difficult, the above figures are the presently agreed upon criteria for record purposes.

Equipment:

As a rule, Farmer's Walk implements consist of two identical handles of variable overall length attached to two larger, cylinder-like main sections. The main section can be either a fix weighted object such as an oxygen tank or, more practically, plate loaded posts. These posts are horizontal to the ground and must be long enough so as not to interfere with the stride of the user.



Surfaces and Footwear:

The Farmer's Walk can be performed on multiple surfaces depending upon the goal of the training. As mentioned, a grass surface will increase the difficulty and instability of the stride. This may be desired for rehab situations or with athletes who have demonstrated weakened ankle joints in need of training. For example, alpine skiers and figure skaters often report very weak ankles from wearing equipment that limits ankle mobility for their extensively long competitive seasons. The same applies to ice hockey. We recommend that hockey players spend several weeks per year doing "remedial" loads in the FW in bare feet on a surface such as grass or turf. This will force the firing of lower leg stabilizers, such as the flexor hallicus longus, which may become considerably weakened throughout the competitive season. Under "standard conditions" with healthy athletes, hiking/work boots are preferred as higher loads can be used without a danger of rolling an ankle.

A change in training surface is recommended for all athletes using this tool regularly. That being said, it is necessary to consider the type of apparatus used when training on hard surfaces, as unexpected drops are inevitable and damage to the training surface will occur unless precautions are taken. Larger-based bumper plates as loading implements are the preferred option in this case.

Special advantages of the farmer's walk (FW):

Re-establishment of Leg Structural Balance

The FW can be helpful to virtually all sports, particularly those involving the lower body and torso. This, of course, covers most sports. It is especially useful for contact sports. Because it is unilateral in nature, it is an outstanding tool for addressing muscular imbalances and weak links in the posterior chain. In fact, it should be considered the foremost tool for this purpose. The fact that many sports require one side of the athlete's body to be dominant over the other, it is crucial that steps, be taken, no pun intended, to prevent uneven development, which could lead to injury. Progress in this exercise will be limited to the weakest side of the body or weakest leg, forcing this weak side to "catch up" to its more highly developed counterpart on the opposite side.

Specific muscle groups worked and sports benefited:

Vastus Medialis Strengthening

The FW is particularly useful in strengthening the vastus medialis muscles. This muscle group, in our experience, is probably one of the most under-trained muscles in American athletes. It is very rare in our practice to see American athletes with sufficient vastus medialis strength levels. During first time structural balance testing, less than one percent of American athletes have sufficient vastus medialis strength. Stronger vastus medialis (VM) cannot only prevent many of the common knee injures as ACL tears, but also translates into faster running speeds.

Improved Running Speeds

Stronger VM reduces the stance phase, which is the time spent on the ground with each stride. The stronger the VM, the shorter the stance phase, as the switch between the eccentric and concentric phases of contraction is shortened.

Ankle Strengthening

The FW is one of the very few movements available that can help an athlete strengthen the ankles in an effective manner. From an anecdotal standpoint, most of our athletes report high levels of delayed onset soreness in the musculature of the lower leg the very first time they use the farmers walk. It is our contention that the FW is superior to methods commonly used, such as wobble boards, which do not duplicate the "normal" firing pattern found during movement with or against load on a field, court or other competitive surface.

Ankle strengthening is particularly useful for law enforcement tactical teams who accomplish most of their tasks with heavy gear.

Spine Rebalancing

The load used may also be manipulated to recruit fibers from one side of the body over the other; for example, loading more weight on the left apparatus than on the right. This is very useful in cases where oblique or erector muscles demonstrate an imbalance. One athletic specialty where this would be useful would be for shot putters. Often times a right handed shot putter will have an imbalance throughout the torso in the obliques, erectors, quadratus lumborum, etc due to the unilateral firing patterns and load of this event. If left unchecked, this imbalance could become a limiting factor in the progress of the squat or other major lift, possibly resulting in an injury. One notoriously weak muscle group, the rhomboids, is very effectively targeted during a standard FW movement. Strengthening this muscle group can be a quick step towards improved results in exercises requiring a fixed back position, such as deadlifts and squats.

Technical Points

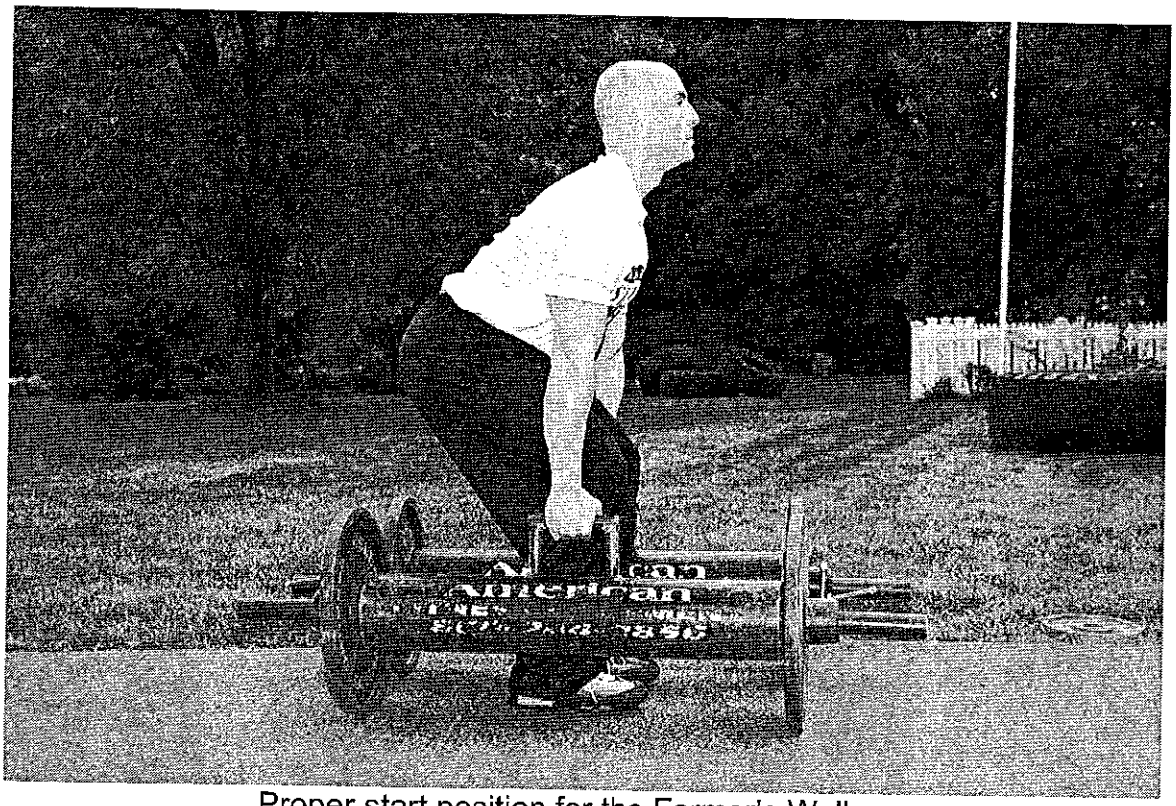
Unless performing timed-holds described below, it is recommended that execution of the FW employ rapid footwork. The increased speed of execution will increase the tendency towards instability of the movement, hence requiring more rapid adjustments on the part of the athlete to compensate. It is this whole body stabilization effort that generates the training effect.

Basic Execution of the event:

- The FW lift-off is crucial and is executed in a dead-lift style with a straight back with a slight arch to avoid injury.
- The body should be in an upright position with a slight lean forward
- The feet should be directly underneath the shoulders.
- An offset foot placement can be used for special purposes described below. Here, one foot is set forward of the other in the 'set' position.
- Hand placement is usually dictated by the type of handles on the apparatus, but should be centered. This will result in a tilting of the weight forward towards the strongest part of the grip.
- If the rear of the hand is in need of rehab or strengthening, the grip position can be shifted toward the forward part of the grip handle. This will tilt the entire apparatus backwards, hence training the third and fourth fingers.
- Several types of grip can be used:
    - hook grip as used in weightlifting. This grip will clearly take some getting used to for those not familiar with the discomfort it can cause. It is quite a secure grip, however.
    - a thumb-less grip where the thumb is not wrapped around the handle, but is instead kept adjacent to the index finger

- a standard wrap-around grip, where the thumb is wrapped around and rests on top of the index and possibly the middle finger.

- Stride length should be a normal, fast, walking gate. Over-striding will result in an unnecessary turning of the hips, which has little training benefit and could result in injury, even with light loads.



Proper start position for the Farmer's Walk

Note: It is very important to maintain contracted abdominals during liftoff and throughout the length of the carry. A momentary relaxation of the abdominals would result in a similar type of injury as would be seen if an athlete relaxed the trunk muscles during a squat. The supportive musculature of the spine would then be required to bear the entire load and could likely result in injury.

Strength Ratings

Coaches and athletes should strive for loads equaling 5 R.M. in full back squat for total weight of handles as a work weight goal for straightforward walks. Superior athletes will use greater than this percentage. It is not uncommon to see 115-120% of body weight per hand for testing or competition purposes.

- **FW Load** = weights are generally referred to by stating the weight loaded on one side only. It is not standard convention to sum both "hands".
- **Intensity** = 100% maximal load moved for 100 feet, without dropping the implements.

Starting point
The starting point should be roughly 100# per hand for healthy, inexperienced male athletes. For female athletes, 75# should be sufficient. For female non-athletes, 75# will be excessive. An adaptation process must be expected with less active populations. As percentages, a safe starting point may fall anywhere from 40%-60% of bodyweight, per hand.

Unbalanced Work is defined as loads which differ from hand to hand. It is strongly recommended that trainees use a maximum of bodyweight as a total workload (both hands) for unbalanced work for the purpose of increasing unilateral firing patterns: example – 125# on the right side + 75# on the left side for 200# athlete. Unbalanced work with loads exceeding bodyweight should be done only with very experienced athletes and with much caution. The upper limit should be 50% max intensity for unstable work.

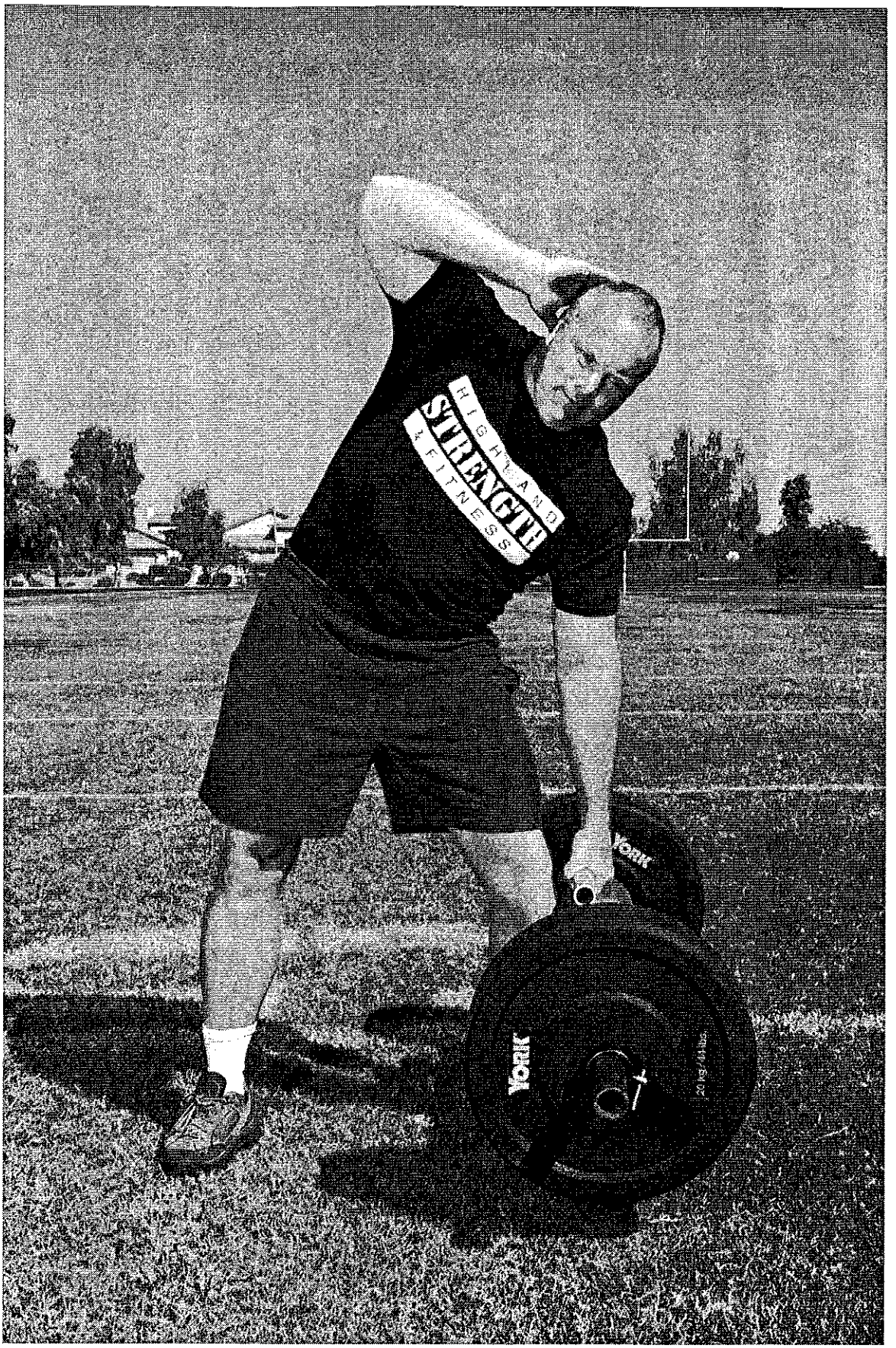
Exercises

FW Side Bends

This exercise is often used as a warm-up. It is performed with the athlete holding only one FW handle at a time.
Technique:

- The athlete should hold only one FW implement on the opposite side of the body to be trained. The athlete holds the implement "suitcase" style to the outside of the leg.
- Unlock the knee adjacent to the implement for increased range of motion.
- The weight is then lowered towards the floor from a standing position as far as the athlete's range of motion will allow while moving only through a frontal plane.
- The athlete then returns to a standing position.
- The prime movers during this exercise are the quadratus lumborum and external obliques.
- The verbal cue for the trainee is to, "Make the belly button the pivot point".

Note: This is a safer variation of a one arm dead-lift for oblique/lower back work. It is quite similar to a simple dumbbell side bend. However, it has been found that more load is tolerated with the FW apparatus.


HIGHLAND
STRENGTH
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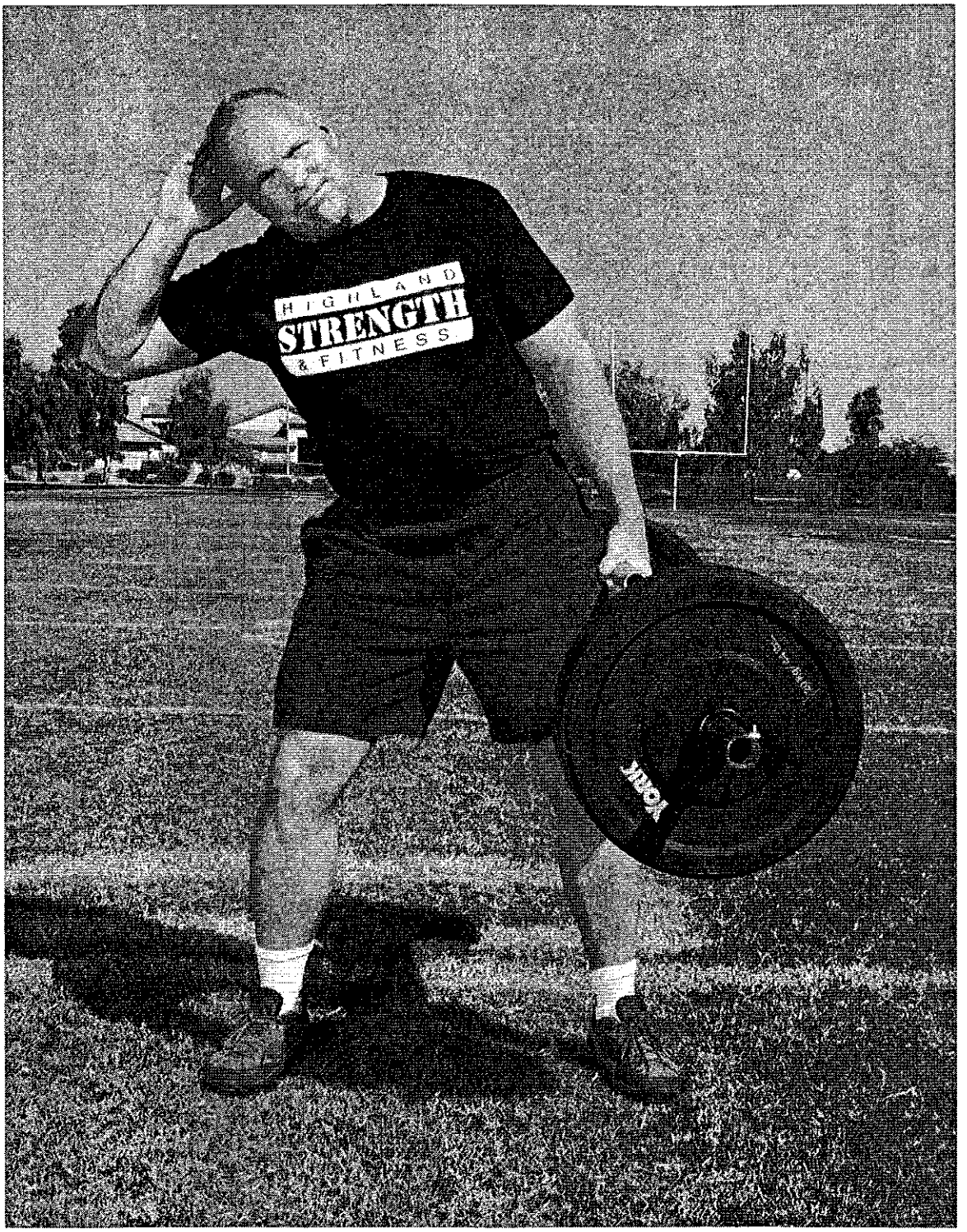
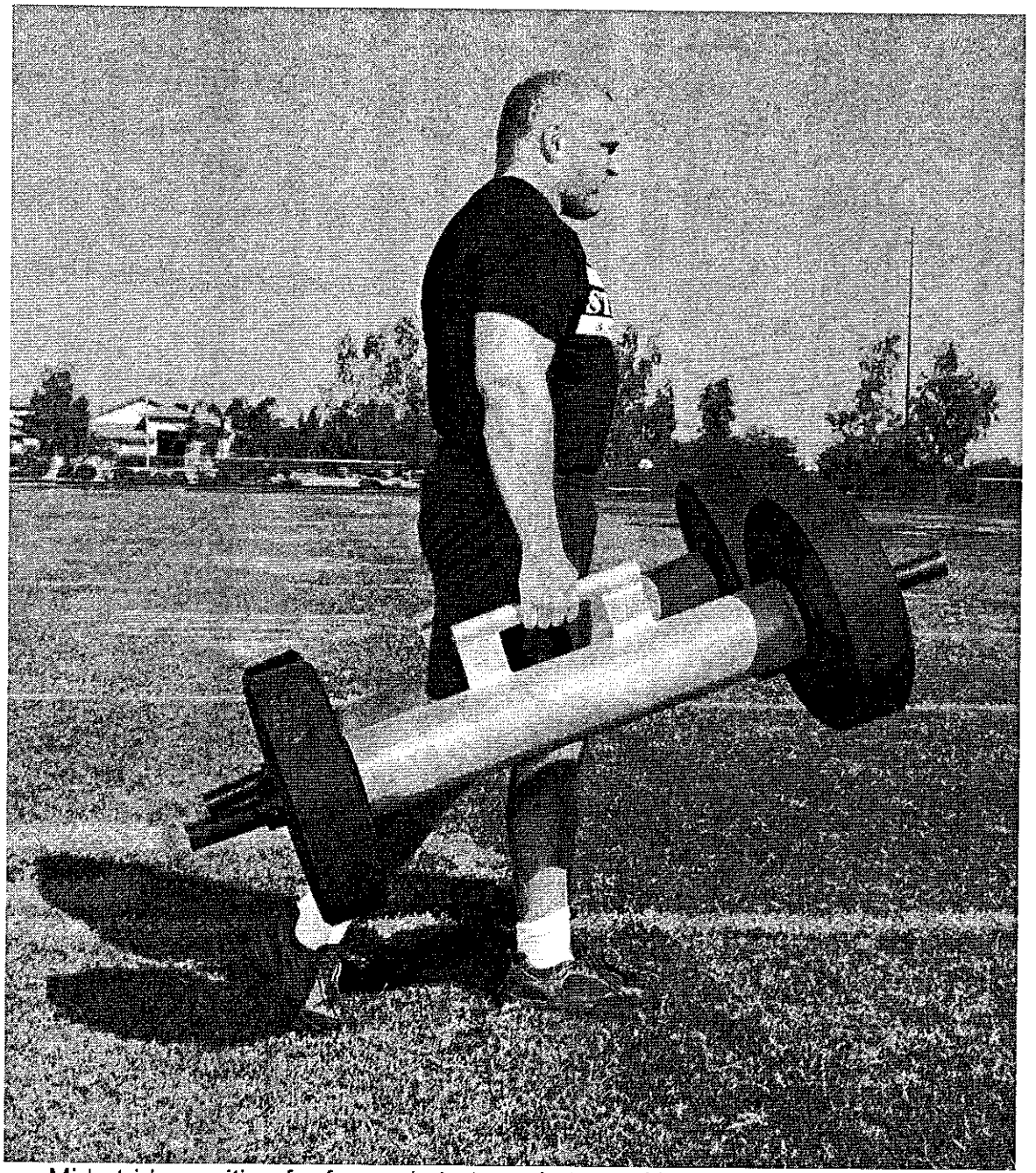
Bottom position for the Farmer's Walk side



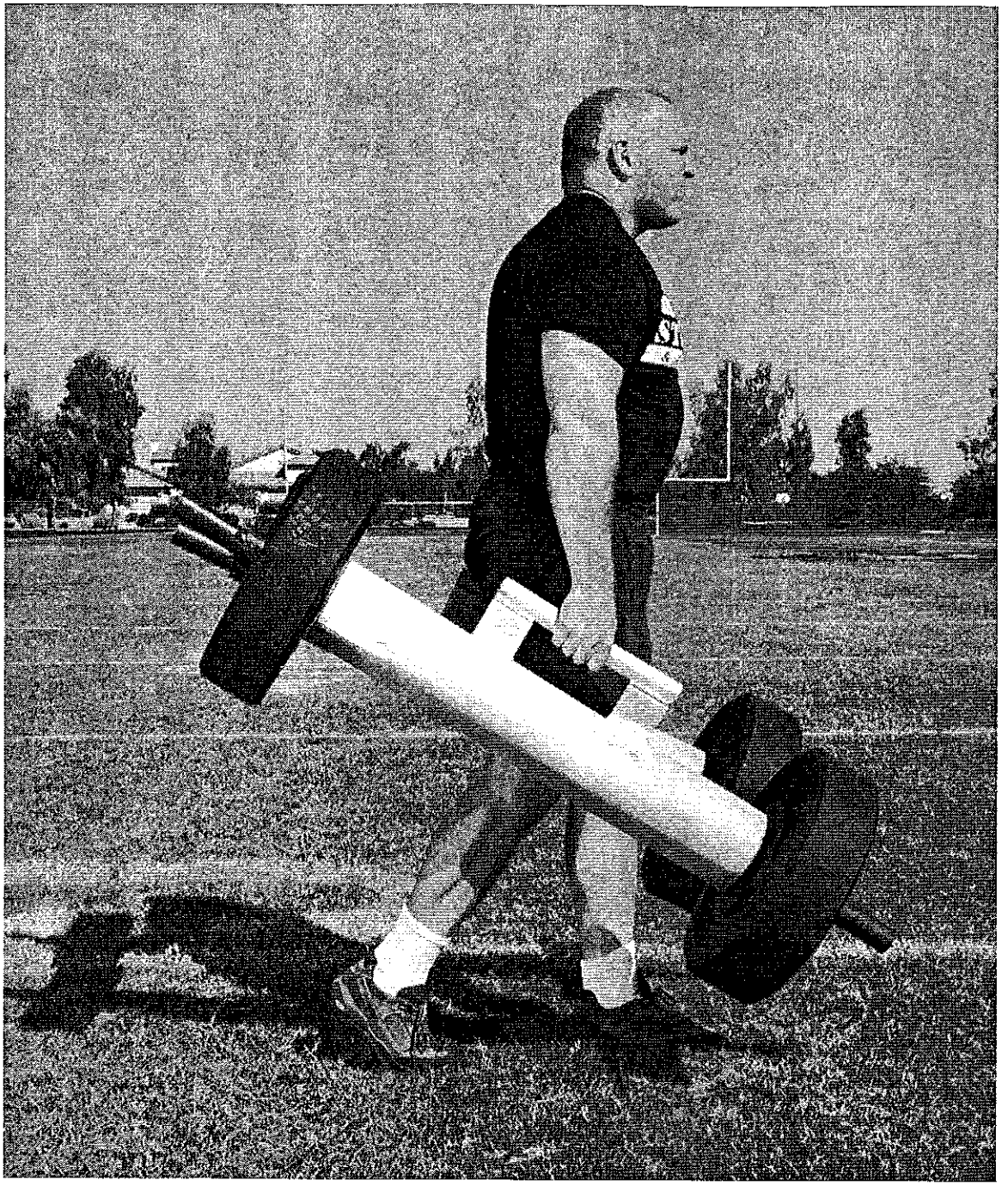
Finish position for Farmer's Walk Side Bend

Forward starts and stops

- Using two FW handles, the athlete initiates a walk and then stops suddenly and is forced to decelerate the weight of the apparatus.
- BEFORE complete control is regained, the athlete rapidly accelerates again, once more forcing stabilizing corrections.
- It is more practical for the coach to provide a random "Stop" signal.



Mid-stride position for forward starts and stops. Note the movement of the implements which will be similar for the Reverse Starts and Stops.



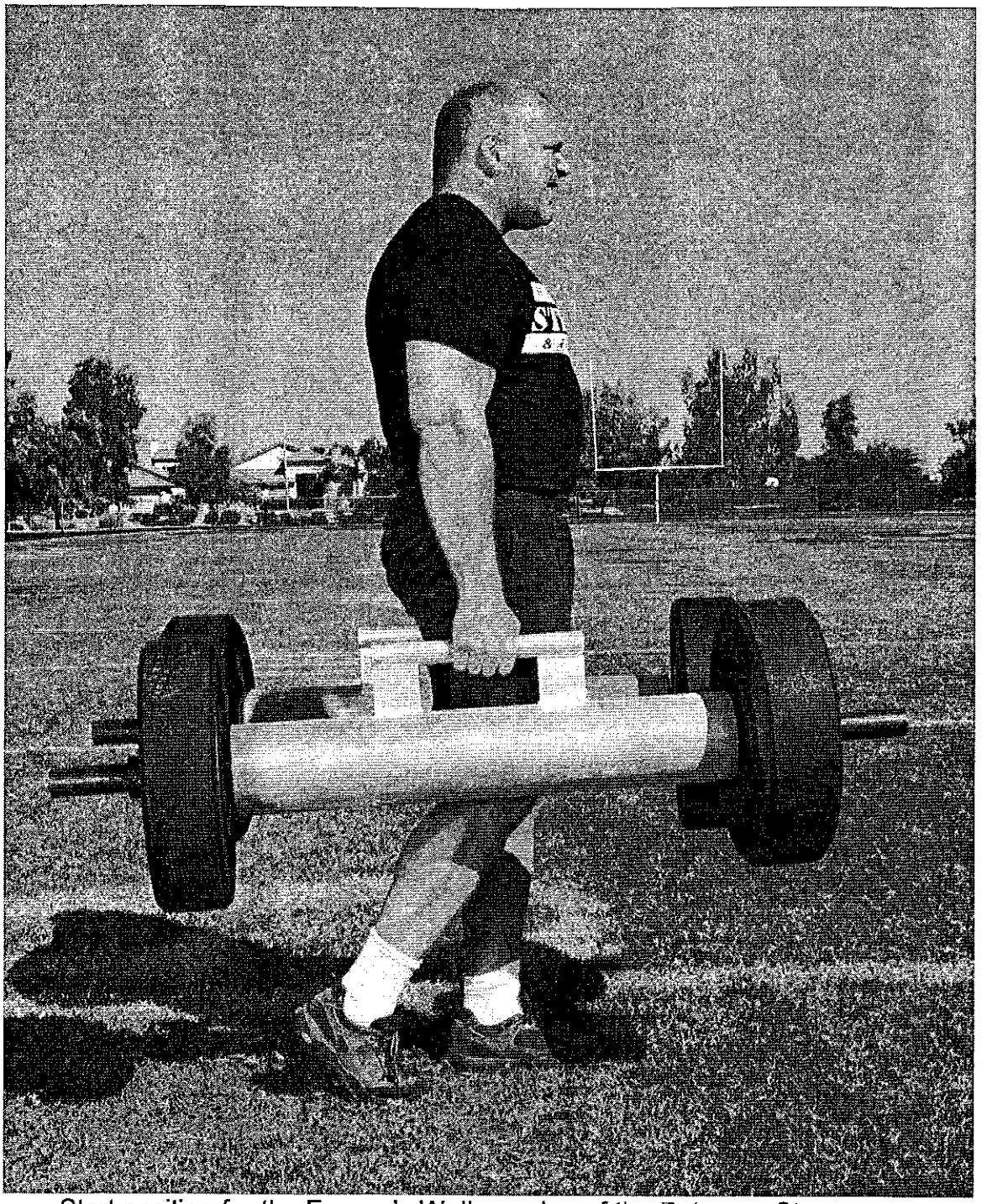
Reverse starts and stops

- Same as above, but performed while moving backwards.

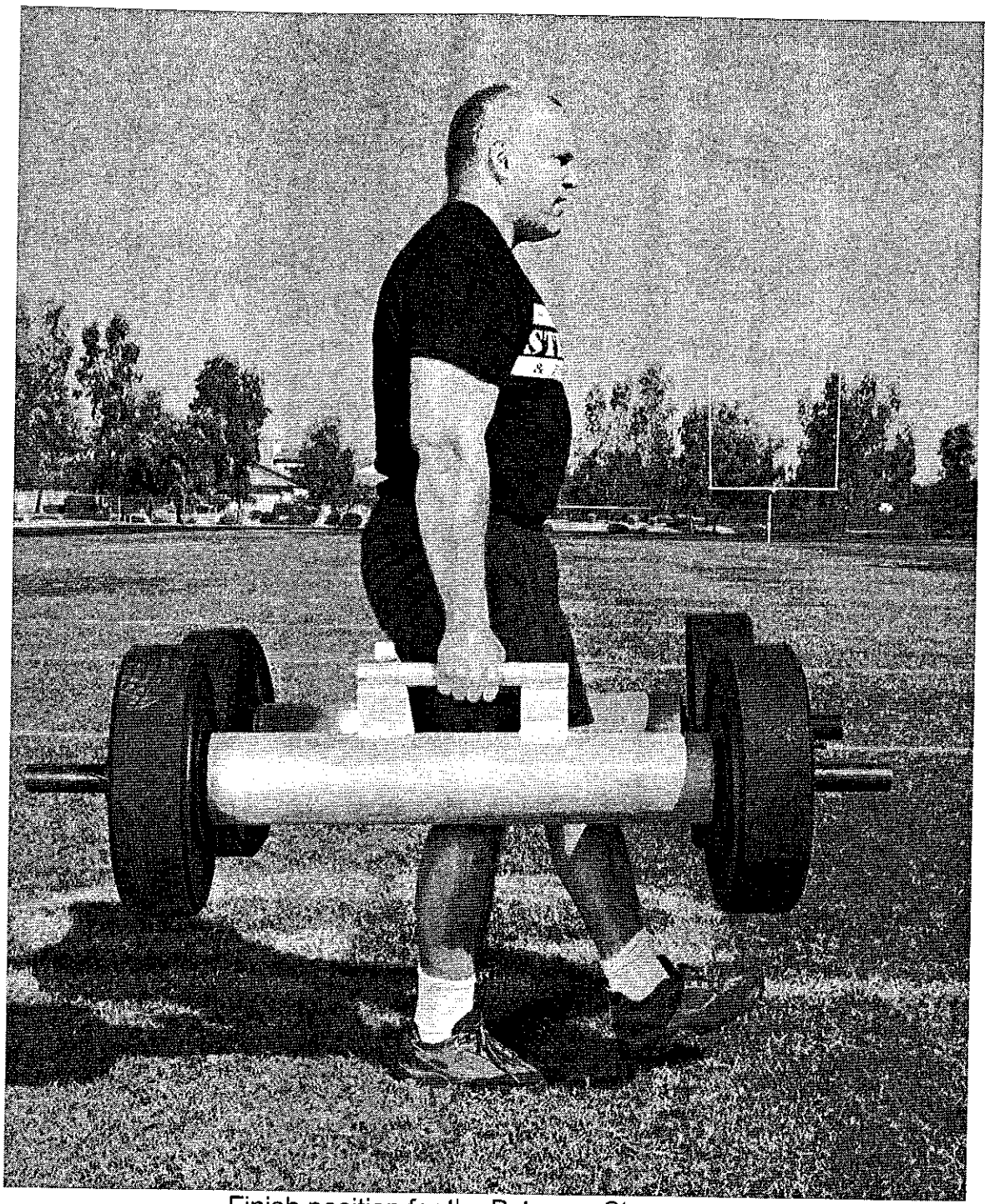
Petersen Walk
This exercise is the strongman version of the Petersen Step up.

Description/steps:

- Stand with equally weighted Farmer's Walk implements in each hand.
- Place the ball of the right foot just behind the left heel so that there is a slight bend in the right leg at the knee. The heel should be lifted to as steep an angle as possible, while keeping the ball of the foot on the ground.
- The right foot must be turned out at a slight angle, roughly 15 degrees.
- Apply downward and forward pressure with the ball of the right foot to break inertia.
- Extend the working leg to a locked position.
- Emphasis should be placed upon driving the heel to the ground as rapidly as possible coupled with an equally rapid extension of the right knee and foot.
- The left foot comes off the ground passively.
- Once the right foot is completely flat on the ground, place the ball of the left foot just behind the right heel.
- Apply downward and forward pressure with the ball of the left foot to break inertia.
- Continue alternating between the right and left foot until the prescribed distance is covered.



Start position for the Farmer's Walk version of the Petersen Step up



Finish position for the Peterson Step up

Timed Holds

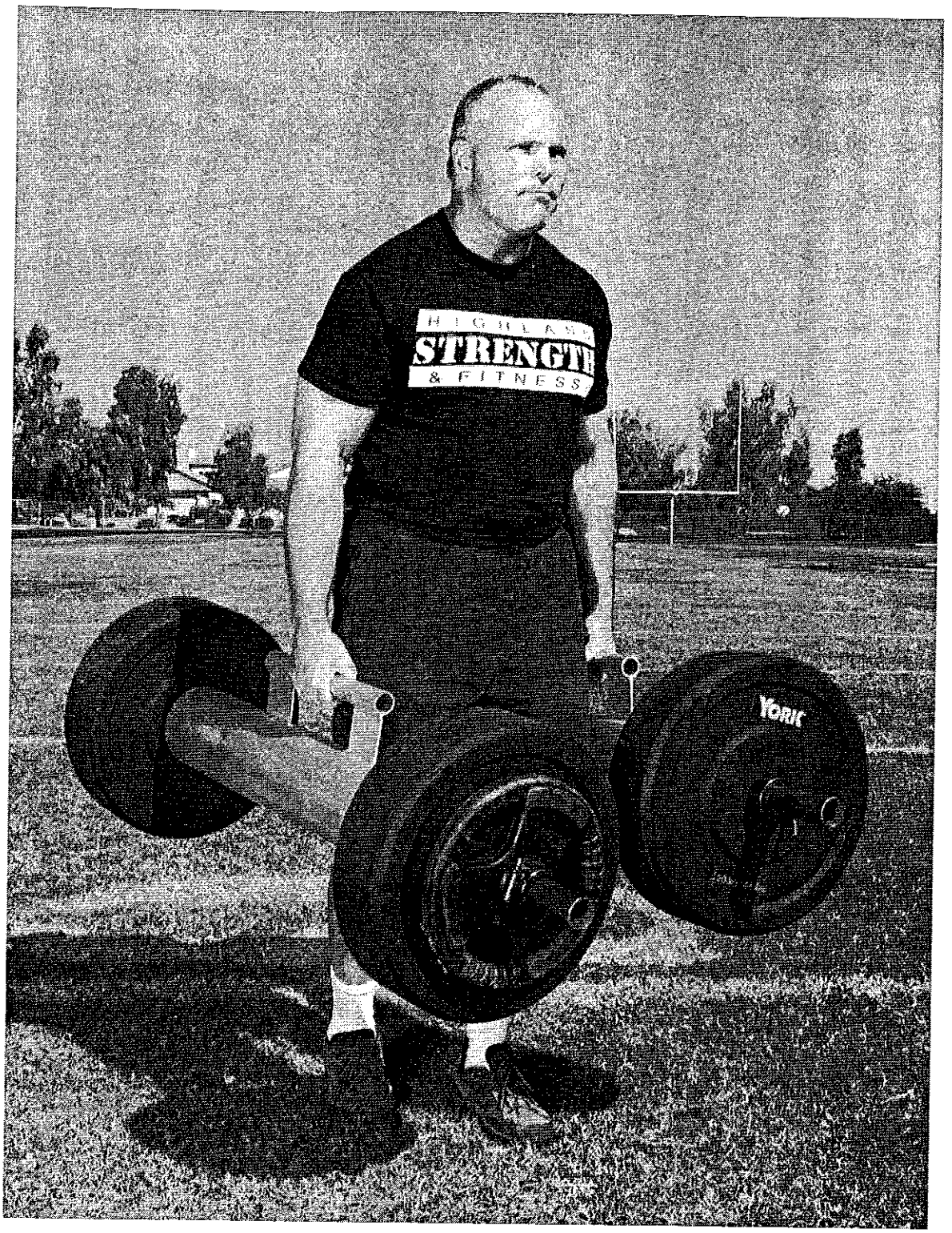
- These are done with the athlete simply standing in place, picking up the handles and holding them as long as possible.
- This is quite mentally challenging and is easily quantifiable. It therefore creates an instant competitive situation for increased training intensity within a training group.

- This is referred to as the "Finnish" method. It is routinely used by strongman competitors in Finland, where outdoor lengthy walks are not an option due to the inclement weather conditions.

Unbalanced Walks

These are used primarily to correct muscular imbalances, rehabilitation from trunk musculature tears at lighter loads, or to prepare an athlete for future training that requires increases torso demands, for example throwers, grapplers and weight lifters.

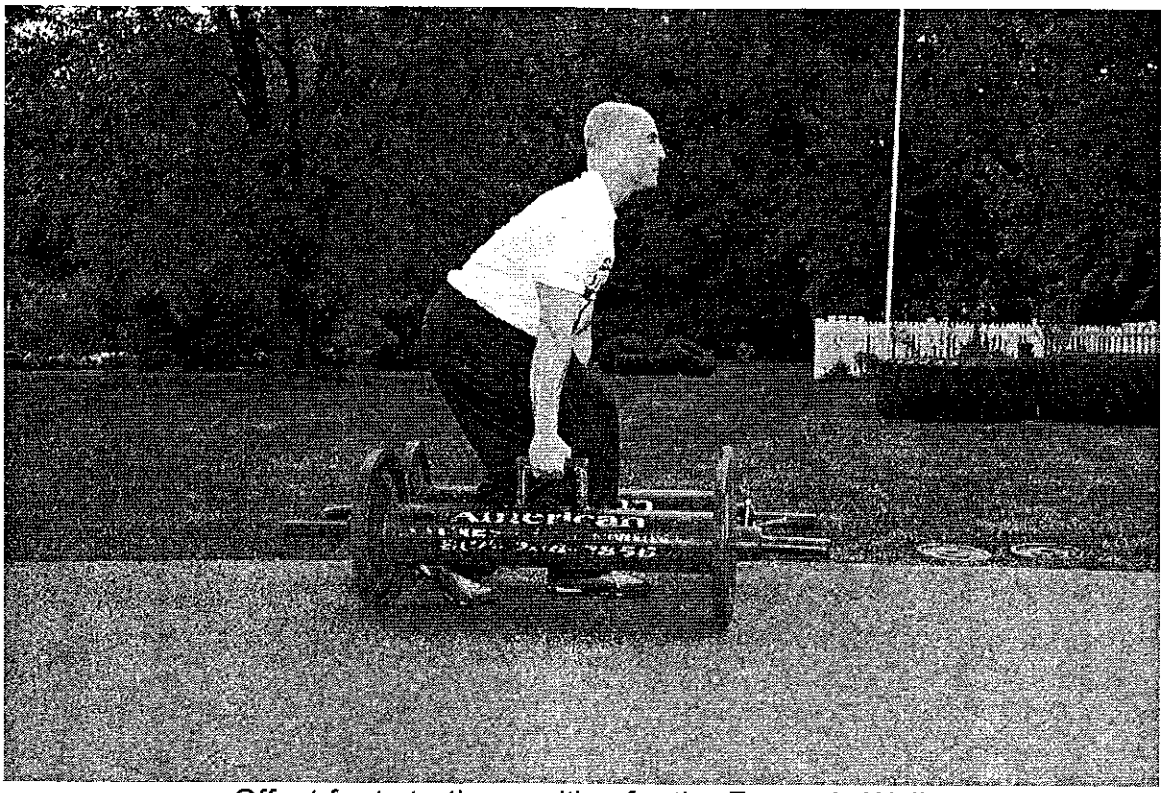
- This can be done with either one or two implements.
- In the single implement version, only one hand holds an implement as he other hand placed on the hip as a minimal counterweight.
- In the two hand version, the athlete loads one implement with slightly more weight than the other and the athlete executes the walk with the exact same technique as the standard walk.
- The focus is on the firing of the torso musculature on the opposite side of the body from either the single implement or opposite the more heavily weighted implement in the two implement version.



Straightforward runs/walk for distance/time. - Highly quantifiable tests.

- These are done with a straight forward carry for a set distance for time or for a maximal distance with a set weight.

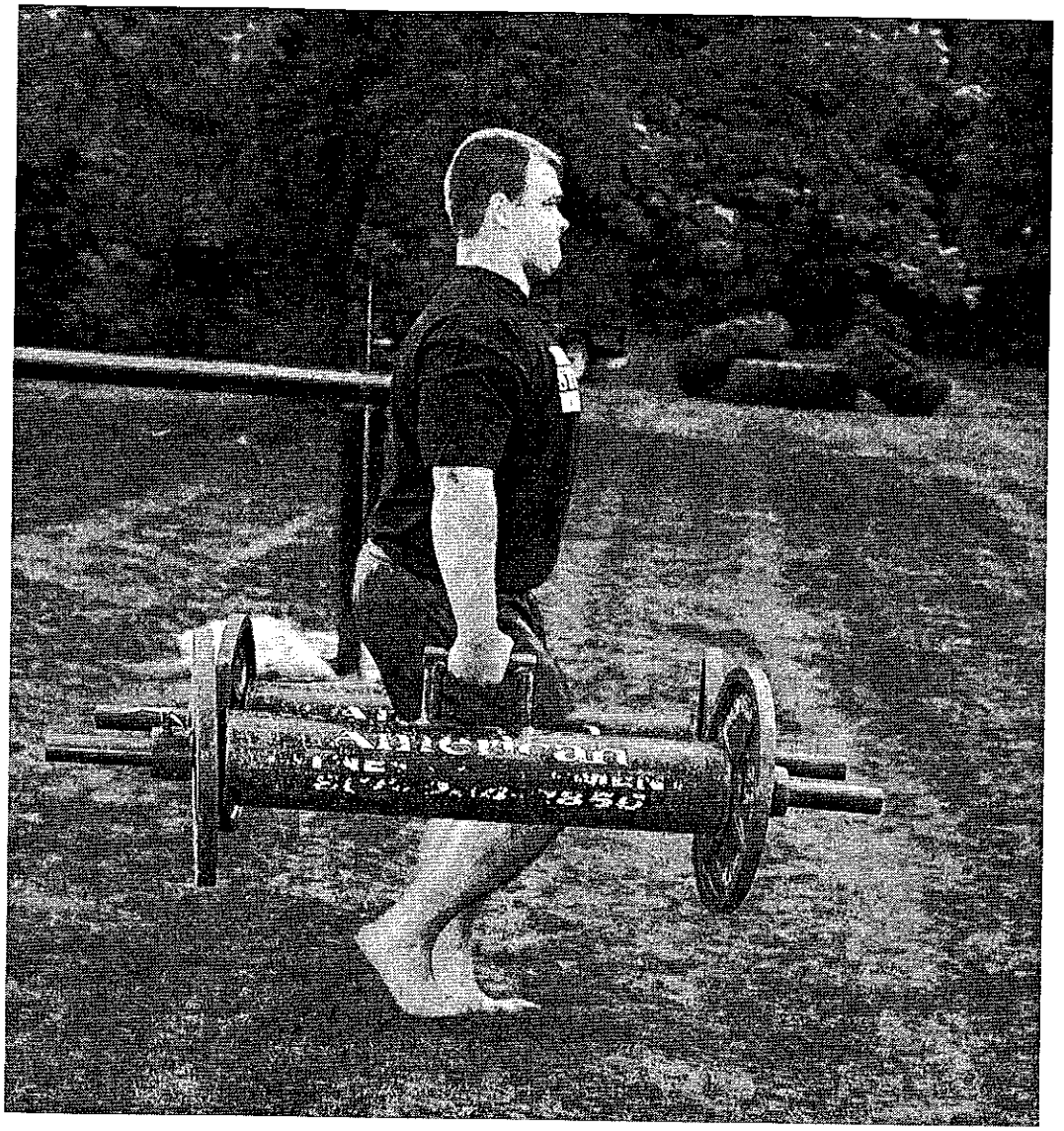
- This is the safest version of the Farmer's Walk and should be the version used for testing purposes.
- This exercise can also be done with a more natural 'offset' foot start. This allows for a quick transition to a normal gait after liftoff.



Offset foot starting position for the Farmer's Walk

Farmer's Walk on Grass

- This exercise is an excellent off-season exercise for sports, such as hockey and figure skating in which the foot is held in a fixed position be a boot or skate.
- It can be considered 'pre-hab' in nature.
- The same technique is applied as seen in the straight-forward walk.
- Attention in focused upon a complete extension at the ankle with a rapid turnover of strides.



Hill Climbs.

- Hills runs/climbs with the FW implements will shift the emphasis from the quadriceps to the glutes very effectively.
- Ascending hills with this form of implement is much safer than some other options such as barbells, which can compromise athlete safety during execution.
- These are generally done for a set distance (the height of the hill or stairs) for the fastest time.

Accumulation Work or Strength Phase
Definition: 30 to 65% of Maximum intensity

The minimal distance for FW work is usually 100 feet, unless unusual

circumstances dictate otherwise. For higher volume work distances up to 250 feet are used. The time under tension should be 30 - 40 seconds and above.

Intensification Work or "Power Phase"
Definition: 66 to 100% of maximal intensity.

The longest distance used should be up to 100-125 feet. The time under tension should be less than 30 seconds.

Time holds should use the 1 minute mark as a maximal mark. Loads resulting in times above this marker should be increased for improved results. Loads here are generally in the 100-125% of maximal intensity range.

Sample routine:
Accumulation Phase:

Petersen Walks
- 5 x 120 feet @ 30% intensity
- 2-3 minute rest

Standard Walks
- 5 x 250 feet at 50% of maximal intensity
- Rest 90-120 seconds

Power phase:

Standard Walk
- 3-4 carries x 100 feet at 80-90% of maximal intensity
- Rest 4-5 minutes between sets
- Off set foot starts
- 3-4 x 100 feet at 80-85% of max intensity
- Rest 3-4 minutes between sets
- Timed Holds
- 2 x max time at 120% of max intensity
- 2 minutes between sets

Upper Back/General Torso Pre-hab/reconditioning (only after medical clearance for weight training has been given!)

Unbalanced Walk
- 2 x 200 feet w/ 65% of bodyweight on one side & 35% of bodyweight on the other
- Rest 2-3 minutes
- 2 x 200 feet with weights reversed
- Rest 10 minutes, including PNF stretching for torso

- 2 x 200 feet forward starts and stops
- Rest 2-3 minutes
- 2 x 200 feet backwards starts and stops

Chapter 4 – Super Yoke

Objectives:

- To learn the "best performances" in event competition
- To learn the technical applications of the equipment
- To learn the specific sports benefited
- To learn specific uses and exercises of the equipment

Background

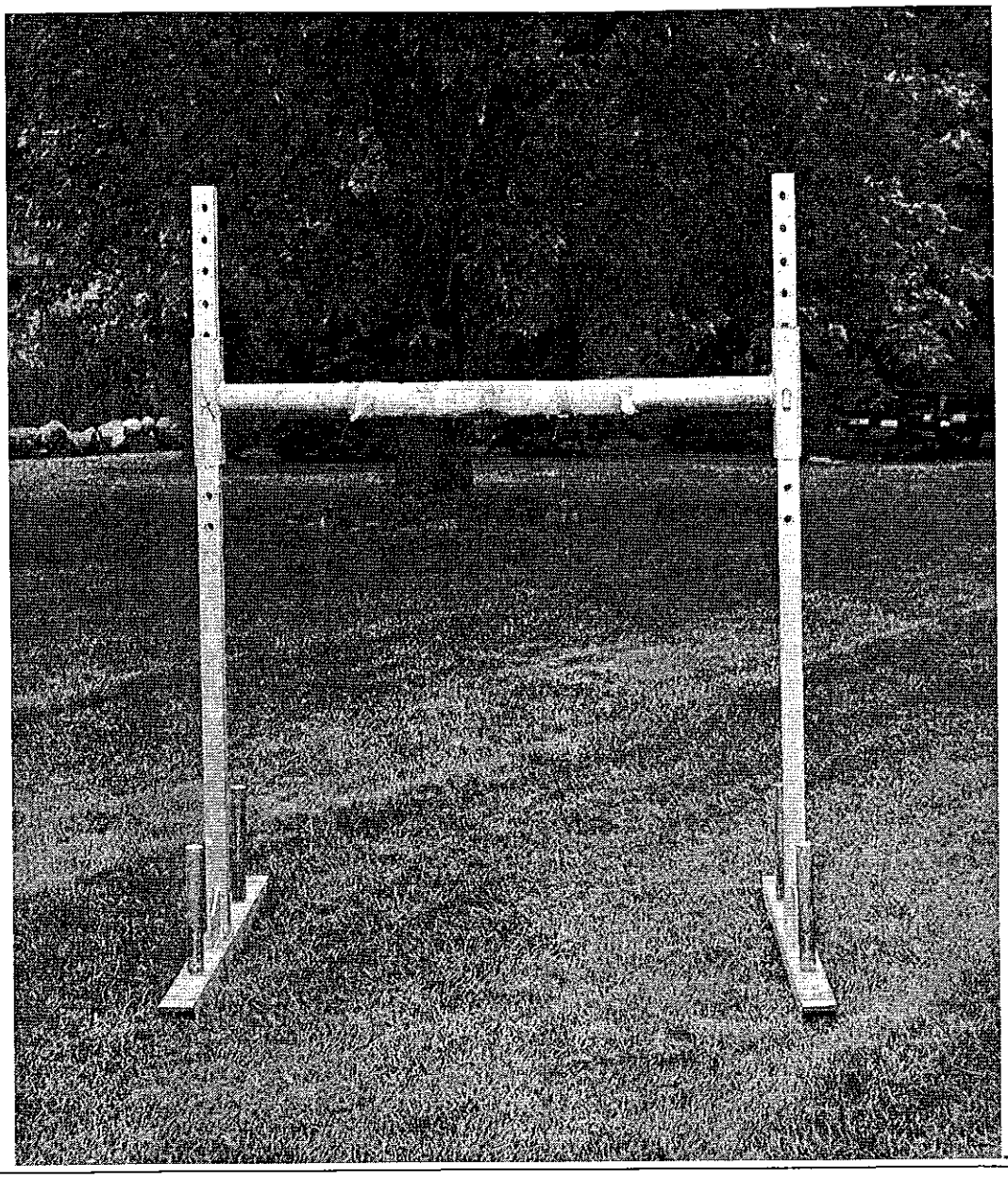
The term 'yoke' itself is quite ancient. To this day, a yoke is commonly attached to cattle or horses in order to use them to haul a particular load. It was seen as an efficient way to haul heavy loads long distances for humans also, such as water and crops, etc. This standard usage was later greatly exaggerated in strongman contests to test overall body strength and, in our opinion, remains one of the foremost tests of torso strength known.

At the time of writing, the recognized world record in the super yoke is held by Dan Ford, from the United States. He carried a yoke weighing 1,245 pounds for distance of 5 meters at Venice Beach, CA in April, 2004.

One unexpected function demonstrated by the super yoke is its ability to help identify athletic talent. In general, individuals thicker through the trunk will have initial advantages here, but well coordinated athletes will quickly excel. The super yoke is arguably the most challenging of the tools (event) described in this series of books. It requires a keen sense of multi-planar, unilateral proprioception. That is, the athlete must constantly correct his or her position under the load while moving forward as quickly as possible. Only athletes with superior trunk strength, reaction time and kinesthetic awareness will accomplish this with any kind of success. Therefore it is very effective in evaluating athletic talent. While not every top-end athlete will excel at the super yoke, virtually all individuals who excel at the super yoke are top-end athletes.

It is all too common to see athletes who are very impressive in the weight room but who cannot demonstrate a high level of skill on the football field. It is our experience that athletes who do well on this tool do very well on the football field.

At this time, there is no set standard for yoke design. As long as the structure is safe during the pickup, carry and drop phases, many different versions have been used in training situations as well as competition.



Applications

Transfer to the squat and dead-lift:

We have many athletes report poundage increases in the squat by just training the lower body exclusively with the super yoke and farmers walk, while abstaining from squat work. One common statement heard from the athletes is that if the super yoke is going well, everything is going well.

The super yoke is an effective tool for virtually any sport, however the transfer is especially notable with contact sports.

Note: Areas of concern:
When designing a program including super yoke work, the coach must be vigilant with regarding to the athlete's overall readiness, general strength levels and training volume. Our experience has shown that setting particular 'minimums' for use of this tool is not possible due to the great variability between individuals and their innate athletic ability.
It is possible to develop irritation in the knee joint and possibly shin splints if this tool is overused or executed with improper technique on a hard surface. If a particular athlete has a history of shin or knee problems, please consult a licensed health professional who will correct the athlete's biomechanics.

Progressions in this exercise should follow the same slow, steady pattern as would be seen in a squat or Olympic lift so that load used does not exceed the ability of the athlete.

Progressions in this exercise should proceed from light, short walks (50 feet or less), to light long (100 feet). "Light" here is defined as roughly bodyweight for a male or female athlete. As a general rule, 'runs' of over 100 feet are only done for accumulation phase work employing straight 'runs' as described below.

Footwear and Surface

As previously mentioned, the super yoke is an outstanding tool for trunk or "core" strength development. Therefore, only well-constructed hiking type shoes or boots should be worn. Do not use this tool to train ankle stabilization as described earlier in the Farmer's Walk chapter. There is too much danger of ankle injury. However, it is recommended that different surface areas be used for training to provide varied trunk stabilization feedback. Grass/Astroturf/Field Turf and Asphalt/cement are the preferred choices.

Technical Points

In general, there are two mindsets possible for a given super yoke session. The first is when the requirement is for the athlete to use as heavy a load as possible for a set distance. During this run, the goal is to prevent the apparatus from moving off line by firing the torso stabilizers to prevent unnecessary movement.

For this goal, hand placement should be straight out to the side with the hands in contact with the vertical uprights. The athlete then uses the shoulder girdle and torso to hold the entire apparatus steady during the forward movement.

The second approach is to intentionally create an unstable apparatus and to force the athlete to correct his or her body position against the subsequent ground forces generated. This is achieved by moving the hand placement away from the uprights and onto the horizontal crossbar, allowing a pendulum-type movement of the support base of

the yoke.

Therefore we have: hand placement on the side uprights = increased stability. While a crossbar hand placement = increased instability.

Unlike the farmer's walk, little advantage has been seen using uneven loading patterns diagonally on the loading pins or left to right uneven loading.

General technique:

The stride used should always be a normal gait. Do not over stride. The foot placement should be a tight, straight line. An uneven gait will result if the feet fall in too a wide pattern off an imaginary straight line in front of the athlete. The glutes should remain contracted to keep the hips in line, directly underneath the shoulders.

Like most lower body exercises, the abdominals should remain tight throughout the entire run. A momentary relaxation in the abdominals could result in low back injury. This is no different than a heavy squat with regard to torso stability. In fact, it is this constantly adjusting contraction against ground forces that provides the training effect of this exercise. The height of the crossbar should be set to pectoral height. As a rule, the longer the vertical upright portion, the more unstable the load becomes, as the distance is greater from the load to the supporting crossbar. If a more stable load is desired, the crossbar should be lower. Be aware however, that a lower crossbar results in a substantially more difficult lift-off. The eyes should be looking straight ahead, never at the ground.

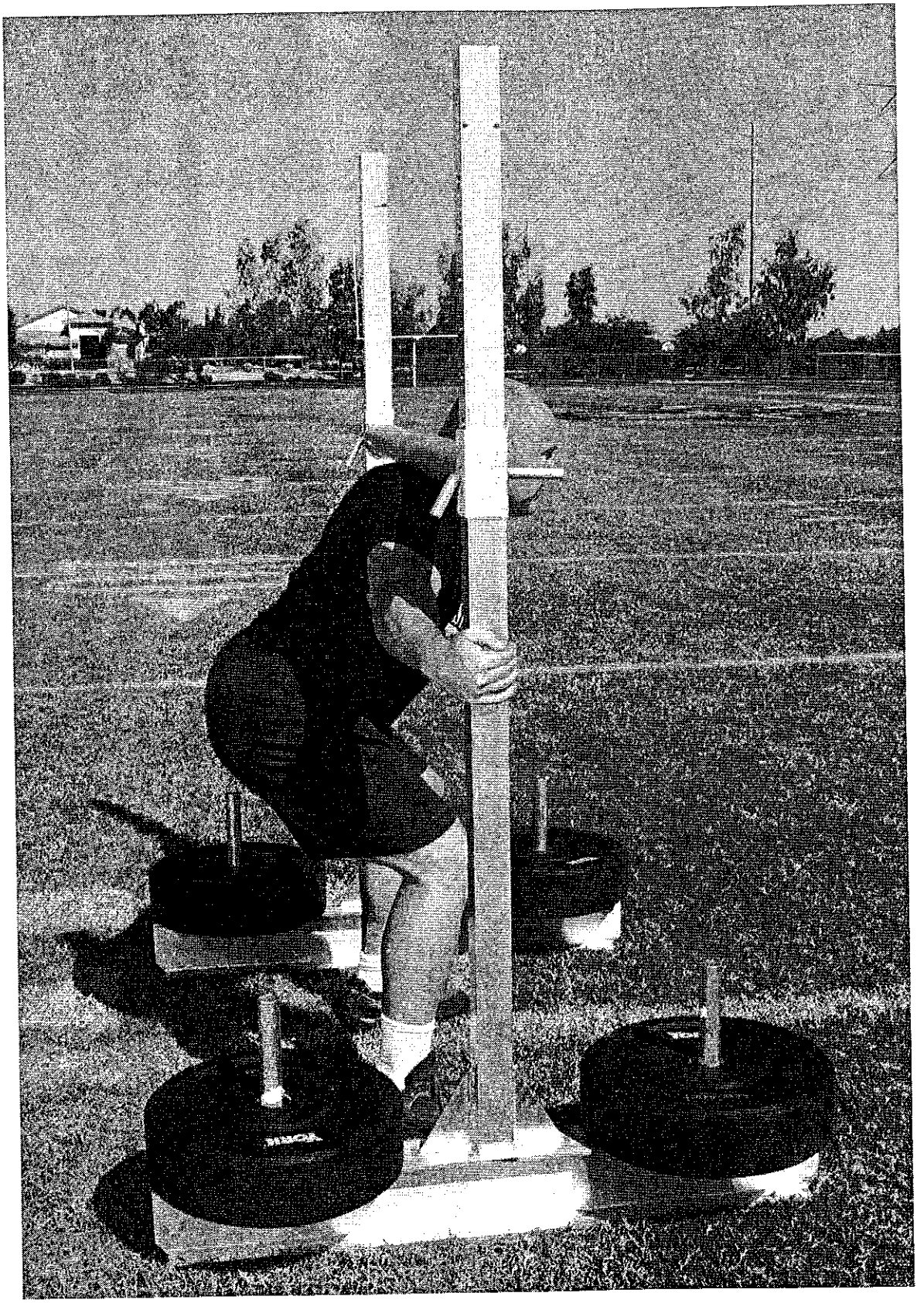
Exercises

Blast Starts with offset feet

Starting position for "Blast Start" with offset feet

In this exercise, the athlete starts with the feet offset with one foot clearly behind the other so that a running stride is achieved more quickly. This type of exercise is often used as part of a 'complex', to be discussed in a later chapter. This movement is only done for 3-5 yards at the most.

Heavy supports or "Bottom position" squats.

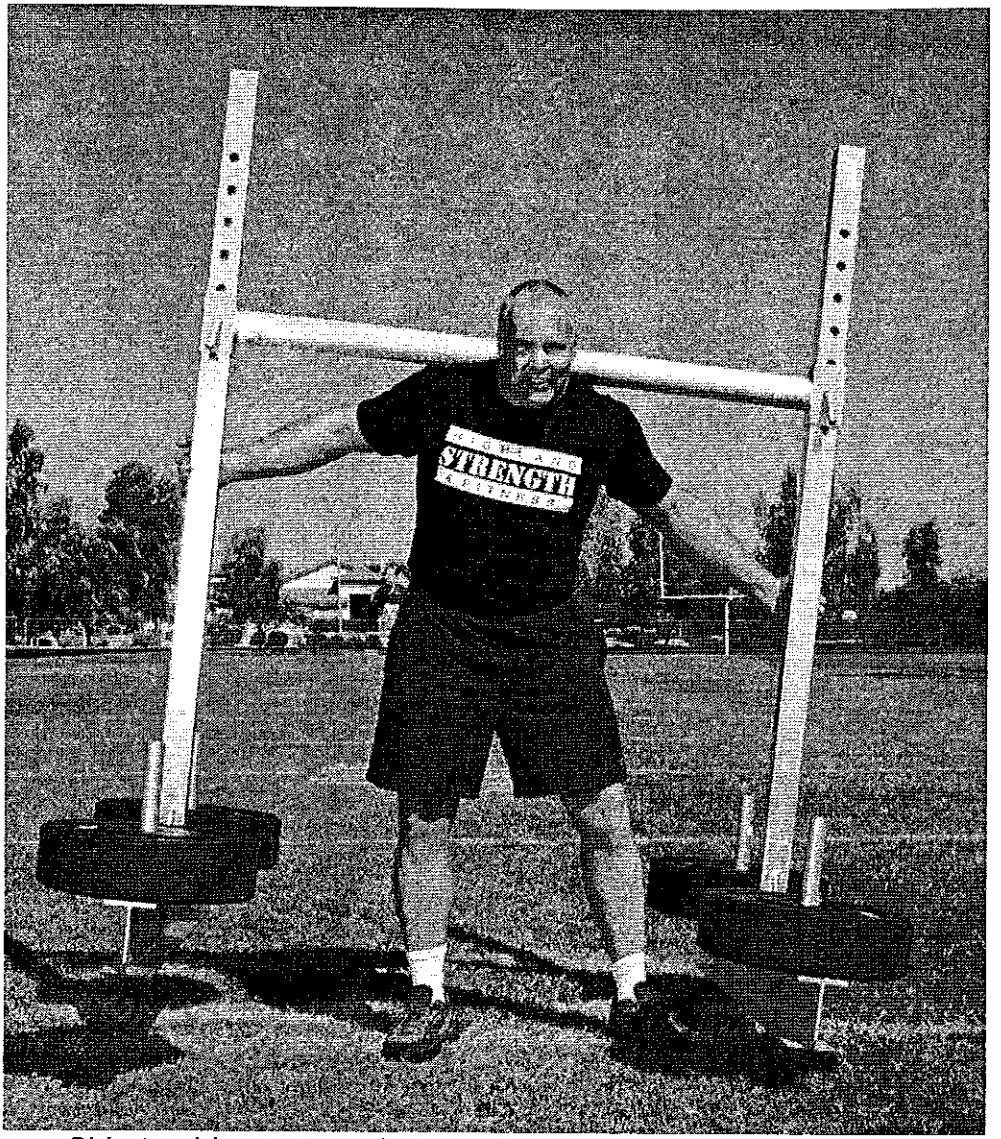


This involves simply standing up with a given load. This is usually done at a position just above parallel. Heavy weights can be used in the lift. It has excellent transfer for developing explosive for powerful starts or vertical take-offs like the ones necessary for blocking in volleyball. The advantage here is that the apparatus can be dropped without regard for damage to a lifting bar or power rack. The yokes are designed to be dropped to the ground. In addition, the instability demonstrated by the yoke at liftoff will work the stabilizers in a way not possible with regular barbells.

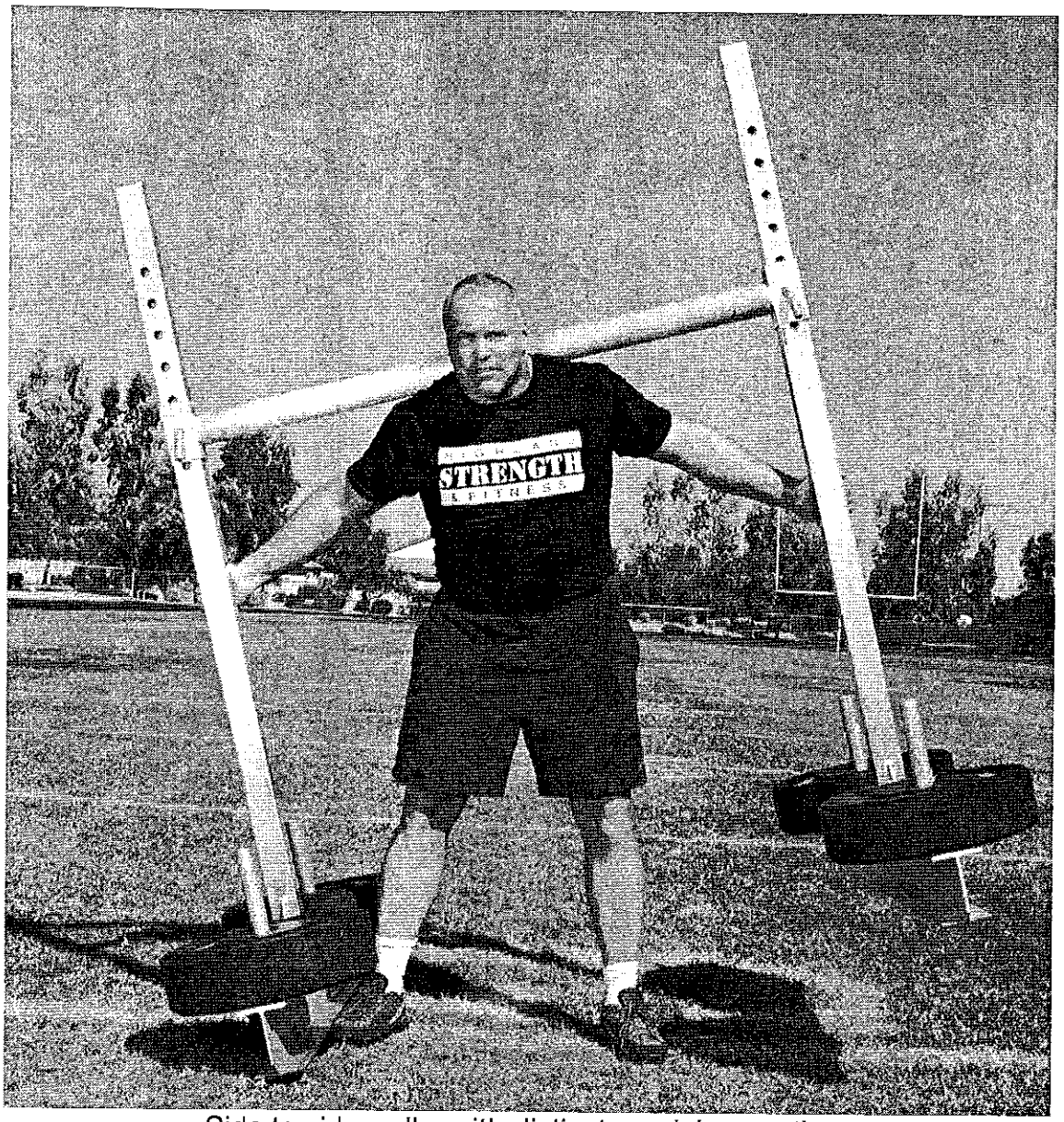
Forward and backwards stops.

In this exercise the athlete intentionally begins to walk forward and then suddenly stops the yoke. The swinging action of the yoke will force the athlete to correct his balance in order not to be thrown out of position by the load. Excellent core strength can be gained here. This is directly applicable to contact sports where an athlete must resist opposing forces attempting to move him or her from against their will. An example of this would be the type of forces an ice hockey defenseman gets exposed to when protecting the goal. This can also be done moving backwards for an entirely different set of corrective movements. An even more realistic scenario might be to have the coach provide a "Stop" signal at random intervals, requiring unannounced corrective measures.

Sideways and diagonal starts and stops.



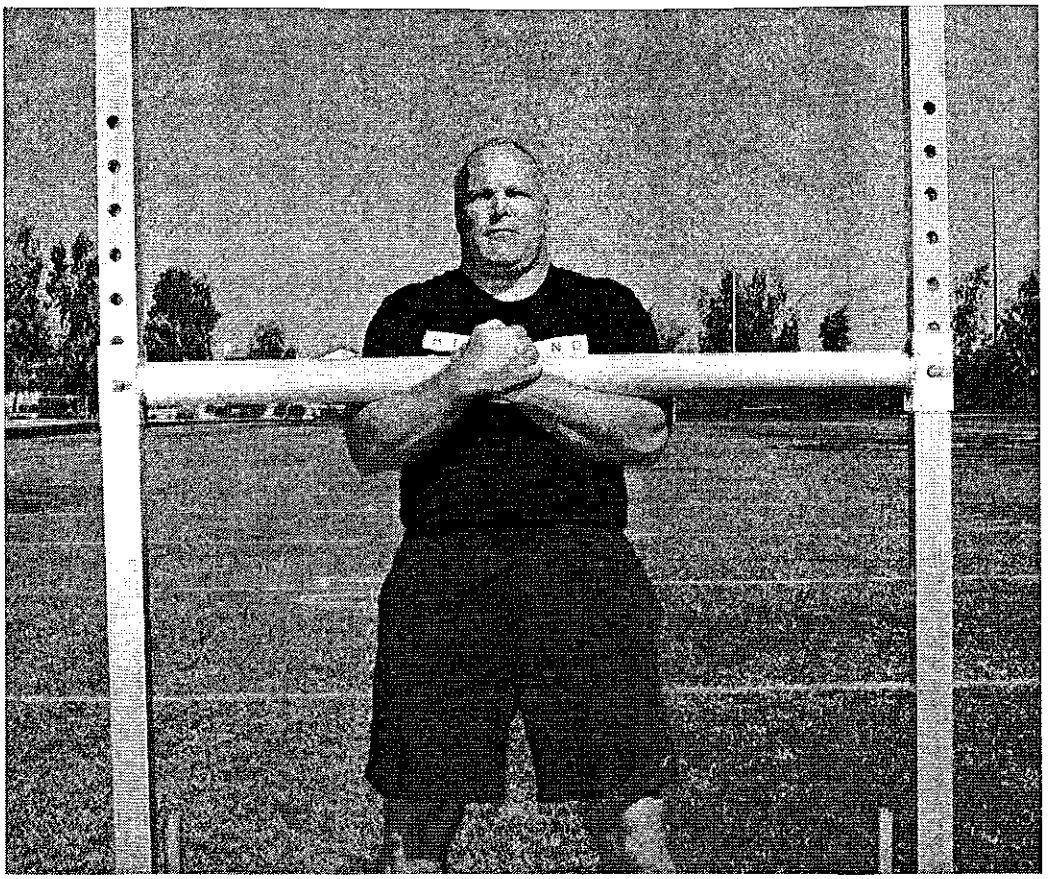
Side to side starts and stops. Done while walking sideways.



Side to side walks with distinct pendulum motion.

Similar to above, but the direction of force is now no longer in a linear direction, forcing more involvement of the obliques, ab/adductors of the hip, etc.

Zercher carries.



The 'Zercher' carry

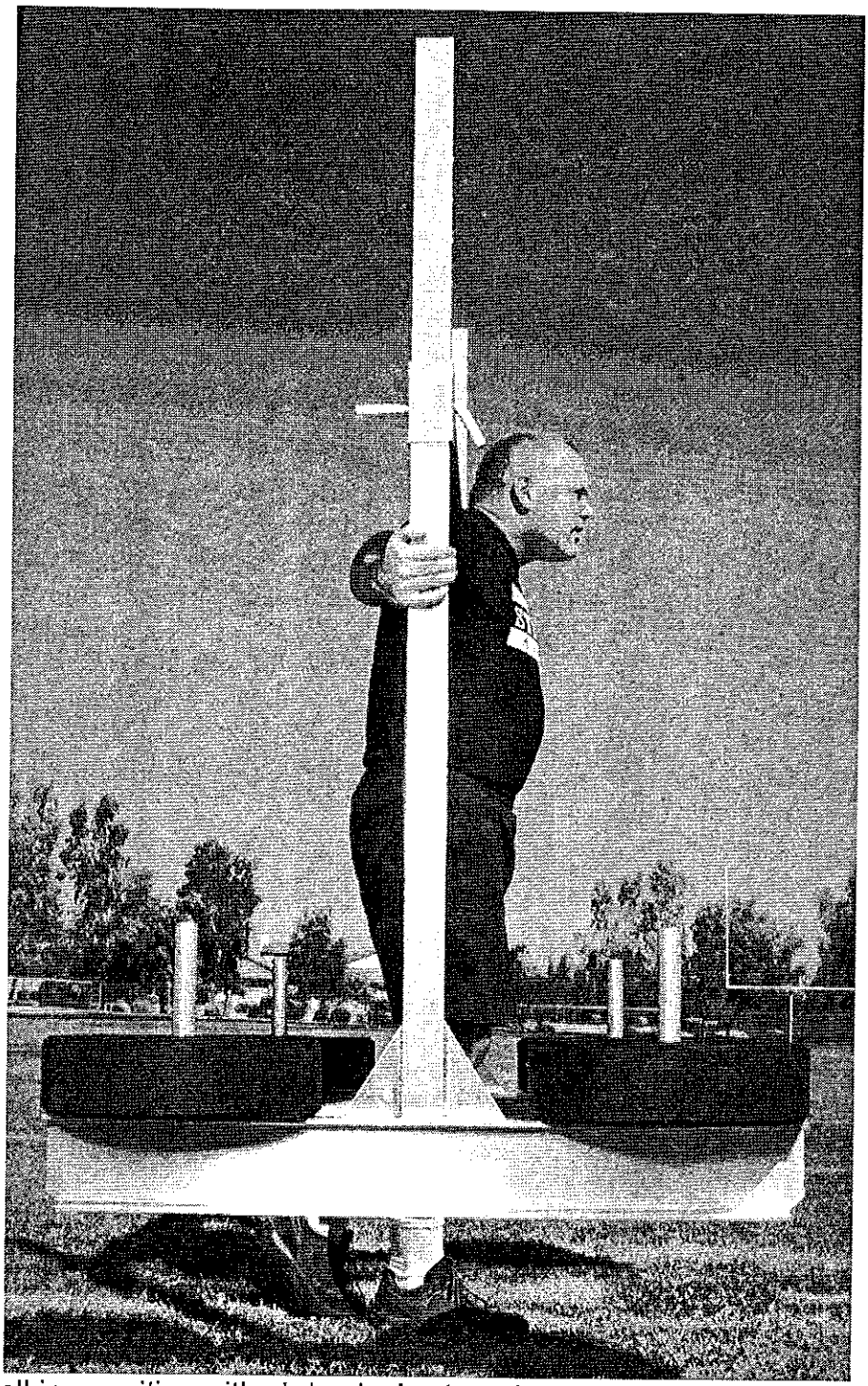
Any exercise done in a 'Zercher' position refers to the bar being held in the bend of the elbow instead of a standard shoulder position. The arms are bent at 90 degrees. The hands are then generally locked together for stability and arms are locked in close to the abdominals. This holding position is very challenging and will shift the load being from spine to the upper back and arms. The position is quite commonly used in strongman shows as part of the Conan's Wheel event. The super yoke can now be adapted to strengthen upper back and biceps. In this manner, athletes who may be unable to carry the apparatus on the shoulders due to flexibility or injury issues can reap the benefits of the exercises described above by using this unique support position.

Injury Prevention

The coach or observer can prevent injury to athletes by watching for the following key indicators: *posture and pace.* The load used should be modified if the pace is below that of a quick, steady gait. Since we are attempting to train torso strength in reaction to a normal competitive situation, to deviate too much from a somewhat accelerated walking pace can negate this training effect. A heavy foot fall is one good indicator of excessive load. The stride should be heel-to-toes with a quick and almost silent turnover of steps.

Improper posture should be an easy flaw to spot. If an athlete cannot maintain an upright posture with the hips in line with the shoulders, injury may result. A forward lean is not a

desired technique here. Decrease the load used immediately if the back begins to lean forward of perpendicular.



Correct walking position with abdominals strongly contracted and pushed outward. Really....they are.

Be aware that supportive gear can mask the presence of both of these faults and should therefore never be used. Knee wraps may be acceptable for heavier sets. Again this

does not differ from execution of heavy squats. In general, belts are only used by competitive strongmen. Their use negates the training effect on the torso.

Strength Ratings:

A target goal of the trainee should be 1 R.M. in full back squat at the 100 feet "intensity level" detailed below. Better athletes will use significantly more than this. It is not uncommon to see 2.5 or 3 times body weight used in testing scenarios.

Intensity:

Maximal intensity for the super yoke can be defined as the maximal load moved forward for 100 feet without dropping the apparatus.

Starting point
An average, healthy athlete should be able to support his/her own bodyweight for a total load in this exercise. This includes the weight of the apparatus.

For any variation of instability work (stops and starts/side to side), a bodyweight total load should be the top end target. The upper limit for *unstable* work can be defined as 50% max intensity.

Accumulation work = 30 to 65% of maximal intensity. The minimal distance is 100 feet. Distances up to 250 feet are employed here in order to generate a time under tension of 30 to 40 seconds. The number of sets is determined by the requirements of that sport.

Intensification work = minimal distance is 15 feet, up to a maximum of 100 feet, with 80% to 125% of maximal intensity. Time under tension is kept to less than 20s. Again, sets are determined by sport specific parameters.

Sample Workouts:

Football Lineman –

Forward bursts 80-85% max intensity x 15 feet (5 meters)
Repeat for 6 sets

Rest 3 minutes between runs.

Start with the original 6 sets, work up to 12 sets over a few workouts to increase the athlete's work capacity.

This routine could be used as an integral part of leg day. It should be used at the beginning of the workout to assure that the vital stabilizer muscles are not fatigued for this activity. Injury could result doing Yoke work with a fatigued torso.

Hockey –

45-50% max intensity, backwards walks – 50 feet (15m)
sideways starts & stops – 50 feet (15m)
forward burst 100 feet.
Done in succession.
Drop the yoke on the ground to reposition for next phase.
Total time 1:00 to 1:15.
Repeat 10-12 times for energy system training.
Be certain to move in each sideways direction an equal number of times.

Mixed Martial Arts –

Zercher carries
25-30% max intensity,– 25 (8 meters) feet, drop yoke, move to other side of yoke and complete a return trip
6 sets, resting 2 minutes between sets

Side to side starts and stops.
40-45% max intensity,– 50 feet each direction
6 sets, resting 90 seconds between sets

This workout helps dramatically with floor work and throws

Chapter 5: Log Pressing

Objectives:

- To learn the history and background of the event
- To understand specific sport applications
- To identify various exercises and benefits using the apparatus

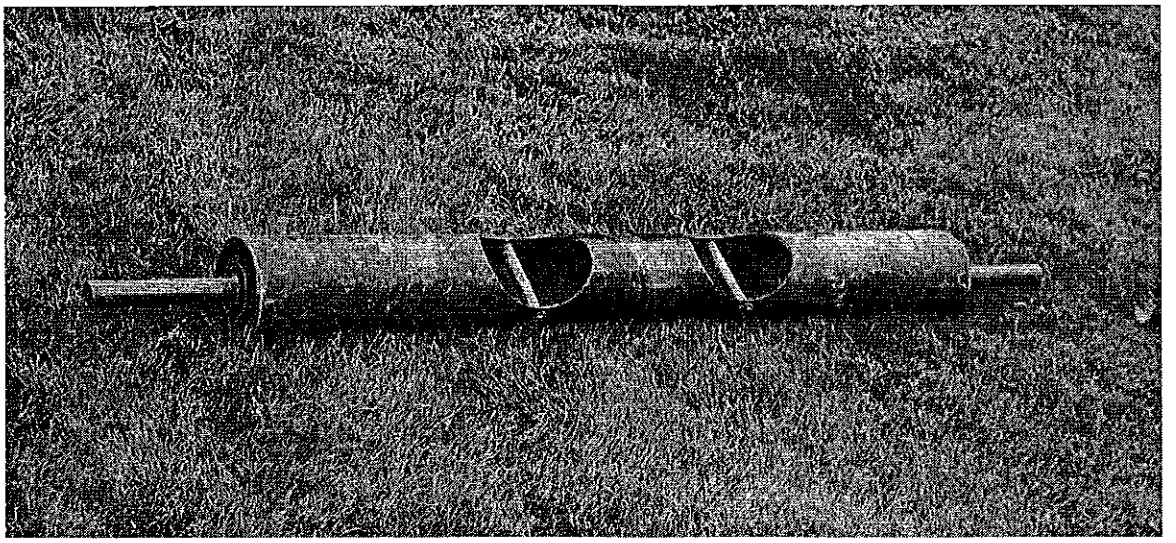
Background:

This event started in the 1970's as a standard test of shoulder strength in strongman competitions. Prior to its popularization as a strongman competitive event, it was used by military forces to develop overall strength. For obvious reasons, it is a readily available training implement in rural areas. Its use by weightlifters for general physical preparation purposes goes back to at least the beginning of the last century.

Equipment:

The log press, as it is preformed today, is done on an apparatus with handles recessed into holes carved in the wood or more realistically, cut into a steel or

aluminum hollow tube. These handles generally run perpendicular to the length of the log. Distance between the handles can vary considerably, but 22 inches (56 cm) apart is a generally accepted standard. The overall length of the log can also vary but, generally, it does not exceed 8 feet (2.43 m) and can be as short as 4 to 5 feet (1.22 to 1.52 m) The longer the log the more difficult it is to control and this can add significantly to the training effect sought in log pressing. The logs are generally from 6 to 14 inches in diameter. All logs should be plate-loadable for practicality.



The typical design of the training log

Applications:

Anecdotally, there were far fewer rotator cuff injuries prior to the use of the bench press as the staple for upper body strength testing. Prior to the 1950's the bench press was virtually unheard of and overhead pressing was the only true manner to improve upper body strength levels. The sport of Olympic lifting used to have an overhead press as a primary event.

The neutral anatomical grip of the log press is actually much more bio-mechanically suitable for the shoulder girdle than the internally rotated position associated with the bench press. In addition, the entire body is involved in overhead log presses. The upper back must stabilize the torso in concert with the abdominals on the opposite side of the body. Whole body involvement is particularly visible when a full clean and press movement is used. The neutral hand position can also help avoid those with wrist/shoulder problems.

Novices using the log press can immediately notice the need for superior rhomboid strength when starting to train with the apparatus. The log is a more transferable movement pattern for football athletes when doing clean and press movements. Finally, there is significantly more biceps involvement in the clean

and press movement due to the semi-supinated hand placement, another plus for most sports training programs.

All of these observations can be attributed to the awkwardness of the apparatus itself. "Odd object" lifting has found a place in many sports training programs in recent years. This family of movements produces muscle recruitment not seen with more balanced barbell exercises and certainly not possible with machine-based exercise movements.

Rehabilitation

For rehab purposes, the log should be reintroduced only after medical clearance for lifting has been given, and before any back supported pressing movements, i.e. bench pressing, incline press, and other press variations. This will allow the trunk stabilizers to be more fully developed before other higher load upper body lifts are reintroduced.

Core Training

As already indicated, the log has an advantage over Olympic bar pressing due to a greater recruitment of the torso stabilizers. The need for core stability increases in proportion to the diameter of the log. As stated, anywhere from 6 inches to 14 inches diameter logs are currently employed. Additionally, because the center of mass of the log is farther away from the lifter's own center of gravity than with a regular barbell, there is an increased lower back recruitment. It is not uncommon for an athlete unfamiliar with log pressing to experience considerable abdominal soreness after an initial log pressing training session.

Bench press carryover

The truth of the matter is that overhead pressing transfers to increased bench press strength, but the reverse is not true. More often than not, trainees report personal records in the bench press after dedication to increasing log pressing weights, concurrent with abstinence from bench pressing.

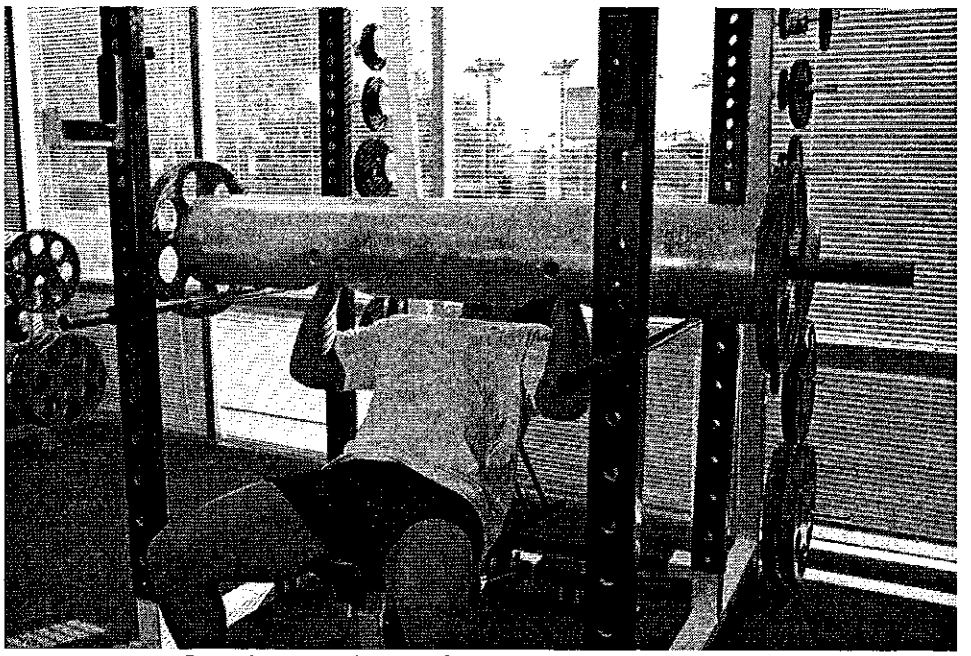
Supportive Equipment

We strongly discourage the use of a lifting belt while training with this exercise, as the belt would negate the core strengthening effects of the log press. In addition, unlike the other exercises discussed, there is no benefit to performing this movement on an uneven or unstable surface. The existing recruitment of the stabilizers is sufficient.

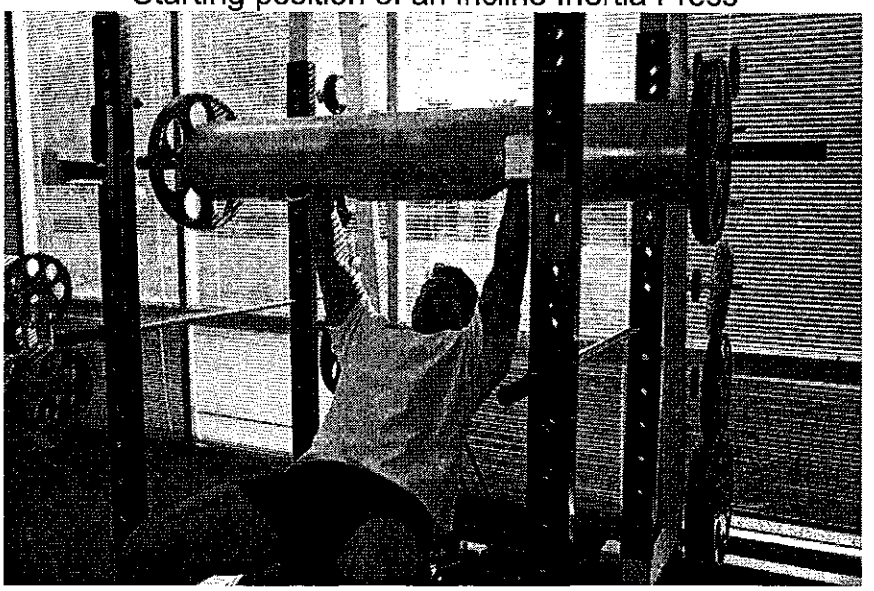
Exercises:

Inertia Press in Power Rack (also referred to as a 'bottom position press')

- This is performed in the power rack with the log fixed so that the handles of the log are at forehead height when the log is resting in the rack.
- The lifter may be in a seated or in a standing position.
- From here, the log is pressed to a fully locked position overhead.
- This is a superior way to develop the triceps and shoulder musculature.



Starting position of an Incline Inertia Press



Finish position of the Incline Inertia Press

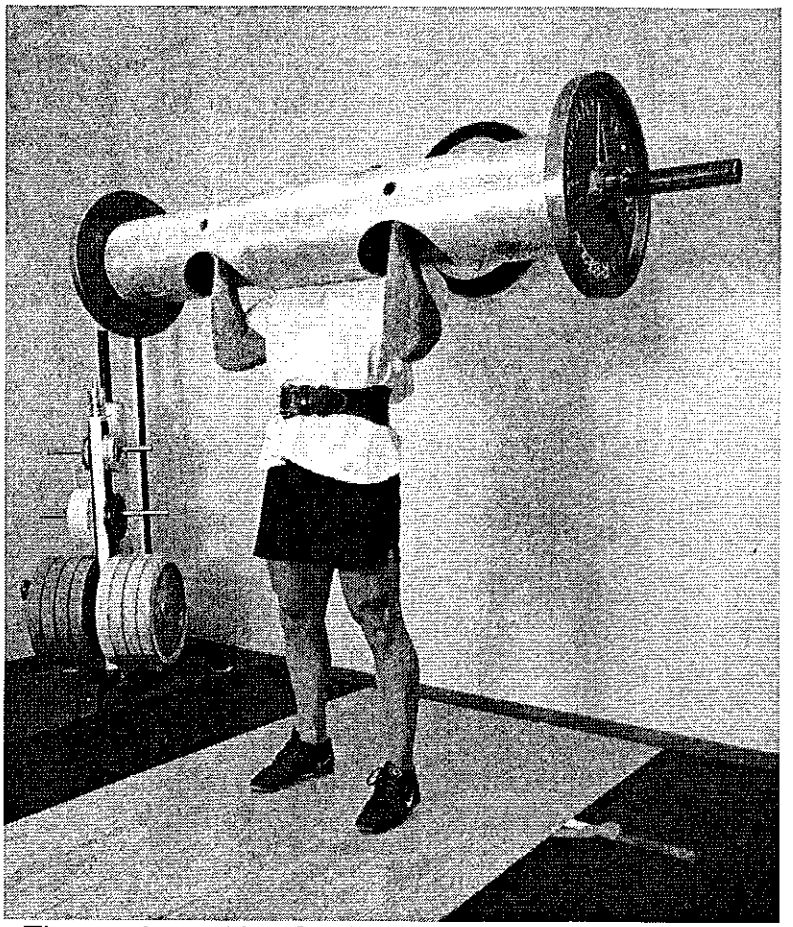
Keep in mind that any form of log press can be done inertia style in the power rack. In other words, flat, decline or incline press can be done with the log within the power rack. Practical experience has shown that band work, as promoted extensively be Louie Simmons and the lifters at Westside Barbell, works extremely well with inertia pressing with the log.

We suggest that the log be placed motionless on the pins for a count of two seconds to eliminate any muscle stretch-reflex in the lift. This trains the lifter's ability to overcome inertia, which has great application for the shot put athlete, for example, but is equally true for football lineman and power lifters.

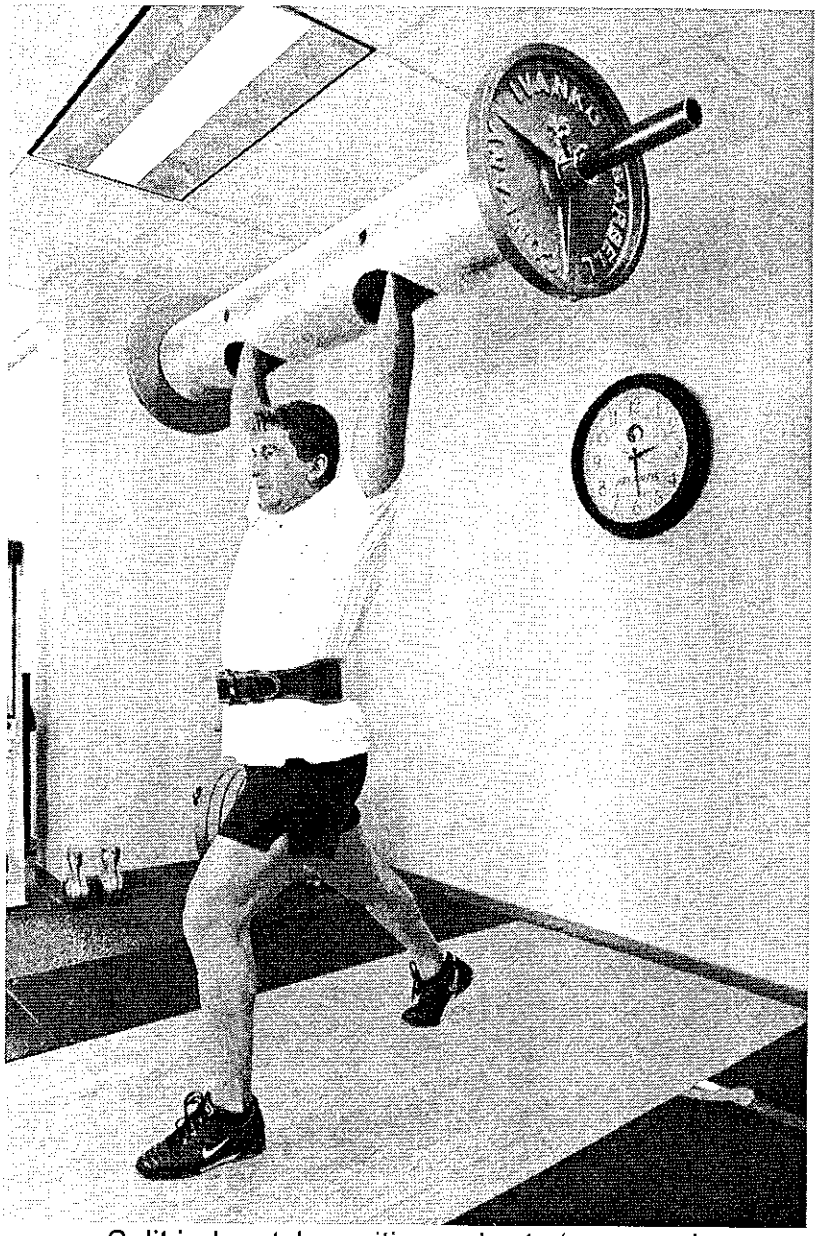
Because of the relative instability caused by the handle grip, the inertia presses are an effective way to strengthen the wrists in both the ulna and radial flexion planes.

Jerks

- This lift is performed in the same manner as a barbell jerk from the rack.
- From a standing position (the bar can be cleaned to this position or taken from a rack), the athlete drives the bar up overhead using an initial knee bend and then, once the hips, knees and ankles are at full extension, drops under the bar using either a split or power drop.
- If a split jerk is used, be certain that both feet are alternated as the forward foot in an equal number of sets. It must be noted that the split jerk lift is not considered complete until the feet are brought back to a side by side position.
- It should be pointed out that the diameter of the log requires a significant movement of the head to keep it out of the way in order for the log to pass by the chin to the overhead position. Many a chin has been inadvertently 'clipped' during execution.
- This exercise produces an outstanding whole body movement.



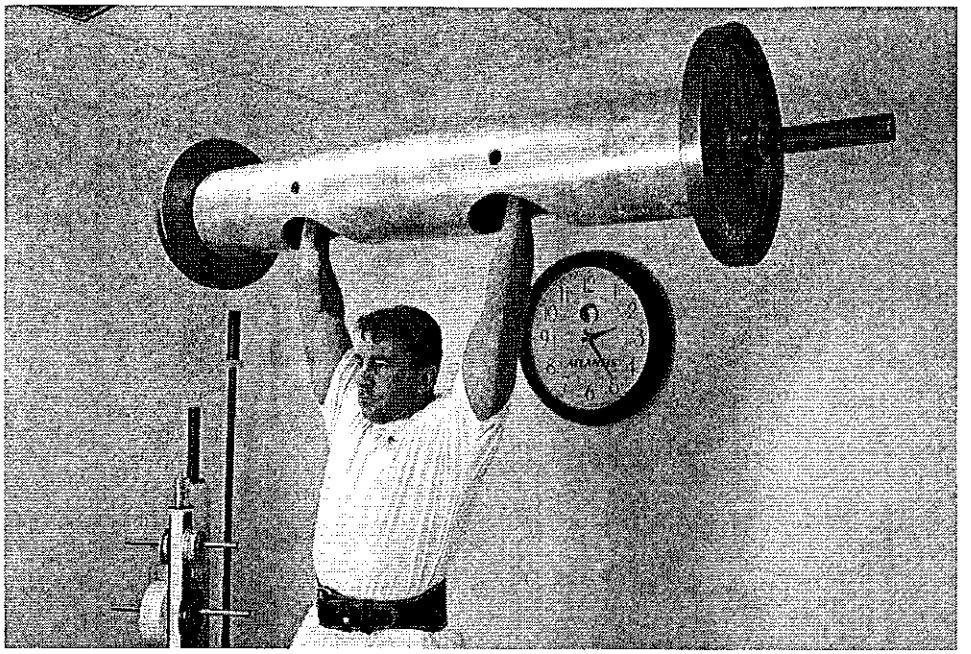
The ready position for the Military Press, Push Jerk, Power Jerk or Split Jerk movement



Split jerk catch position, prior to 'recovery'

Push presses

- Here the log is pressed overhead after an initial push from the legs.
- After this initial knee extension, no re-bend is allowed in the knee.
- This process shifts the emphasis to the shoulders more so than in the jerk.



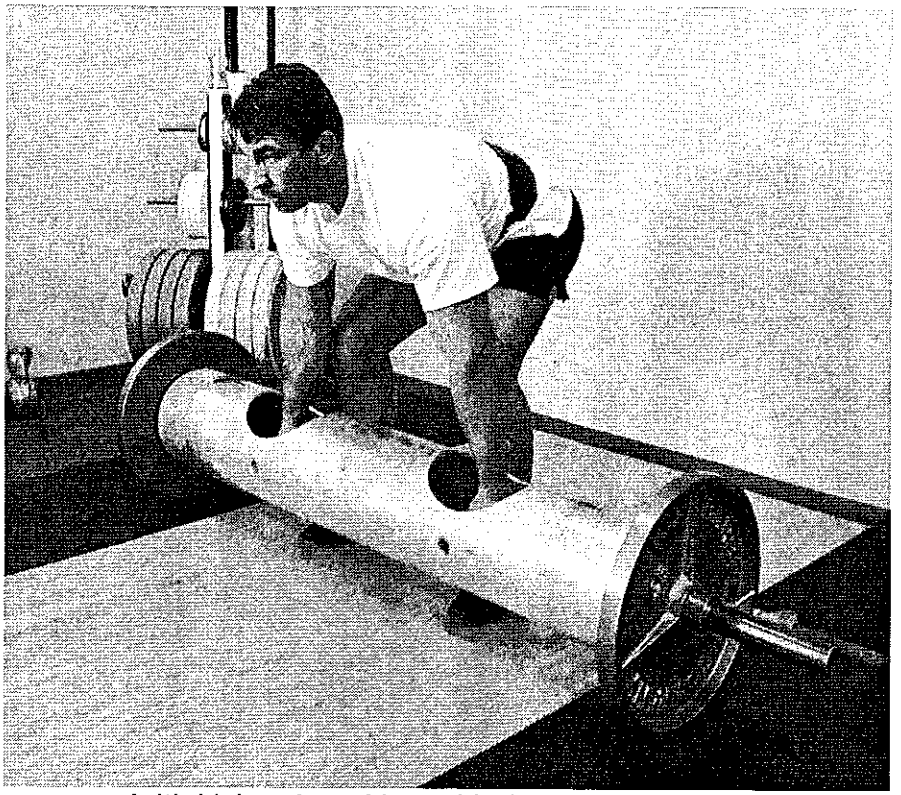
Elbows-locked finish position for all overhead presses

Military Presses

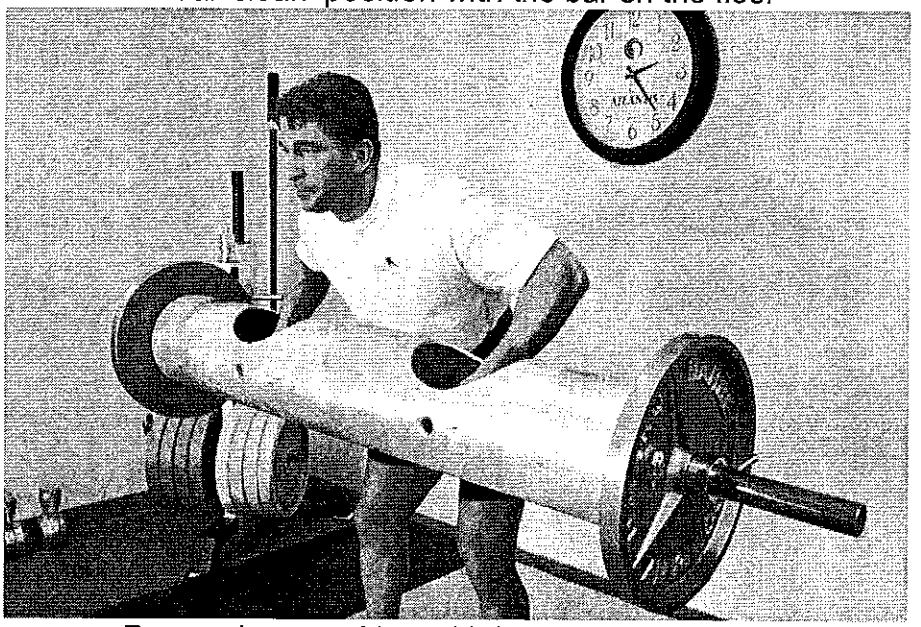
- Here the log is pressed overhead without any assistance from the legs whatsoever.
- The lift may be done while standing or seated, but standing is preferred in order to retain the upper back involvement.

Clean and Presses

- While the pressing portion of this lift has been described above, the clean movement is significantly different from that of a normal barbell.
- The log does not revolve and has a much larger diameter than the barbell.
- Hence, the movement is more of a roll up the abdominals and chest of the lifter to a position on the front deltoids. This has the effect of teaching the trainee how to use the hips the 'throw' the mass of the log upwards towards the chest.



Initial 'clean' position with the bar on the floor



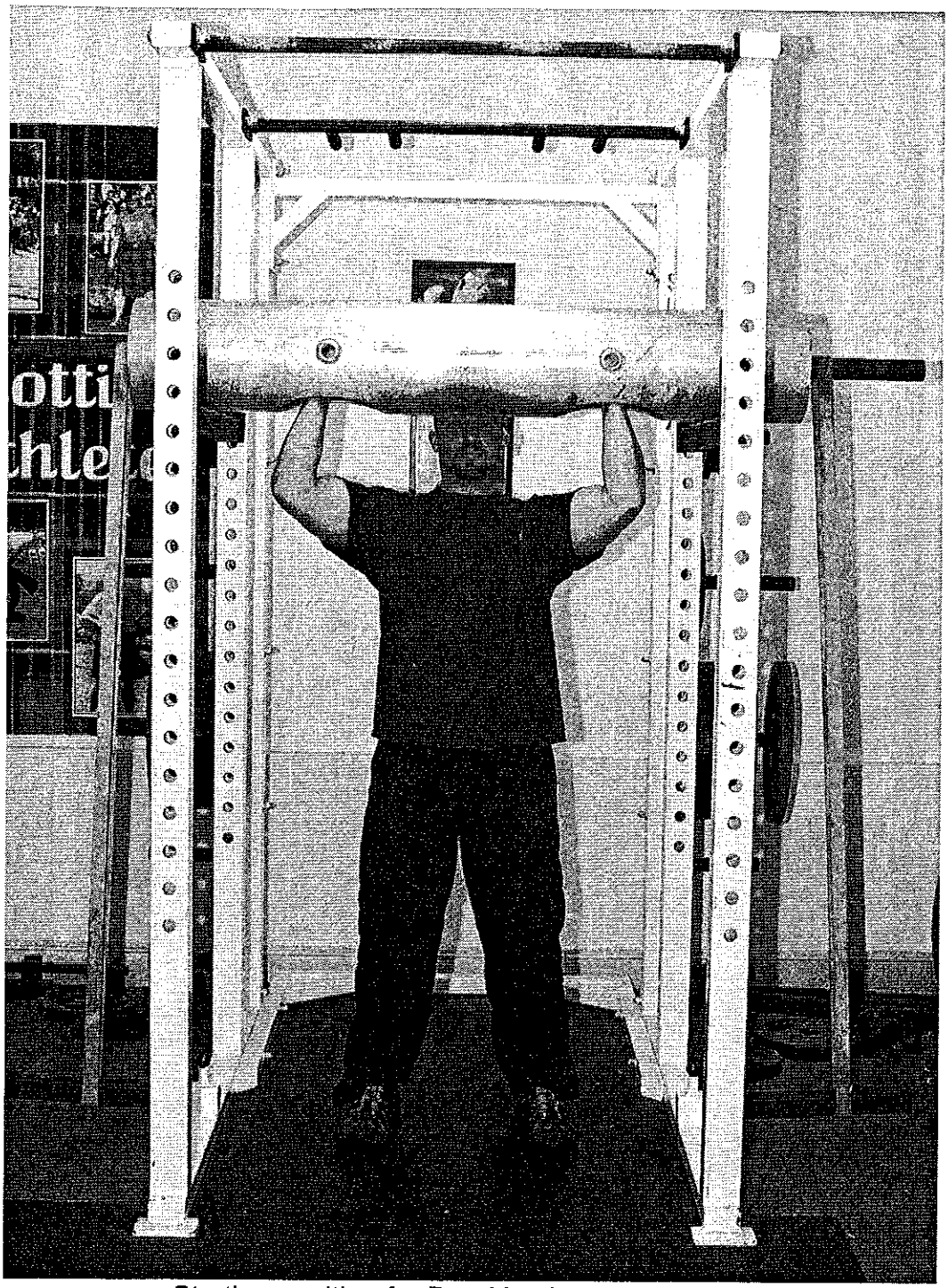
Power clean position with log resting on the lap

Band Lockouts with the Log

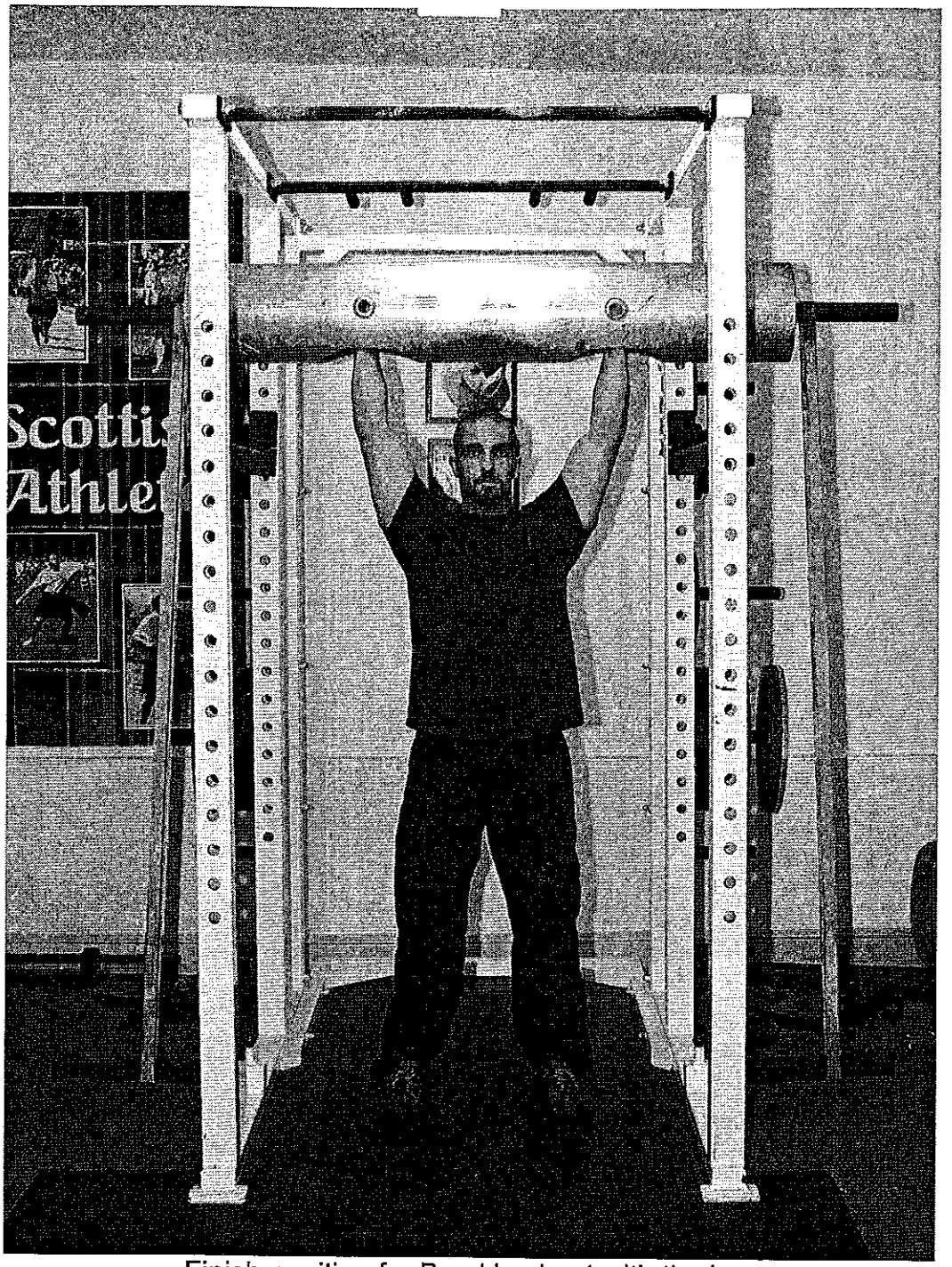
This exercise is a direct modification of the bench press band lockouts used at Westside Barbell. They do a great job of training acceleration at the top of the lift

as the athlete is aware that the bands will make lockout extremely difficult if the load is not moved rapidly.

- Set up a log in the power rack at roughly forehead height.
- Bands should have some tension at the bottom position.
- While standing, the athlete rapidly drives the log to an overhead lockout position.
- Lockout should be held for 3 seconds and then the log is returned to the support pins under control.
- After a 2 second pause, the log is pressed up again.



Starting position for Band Lockout with the Log

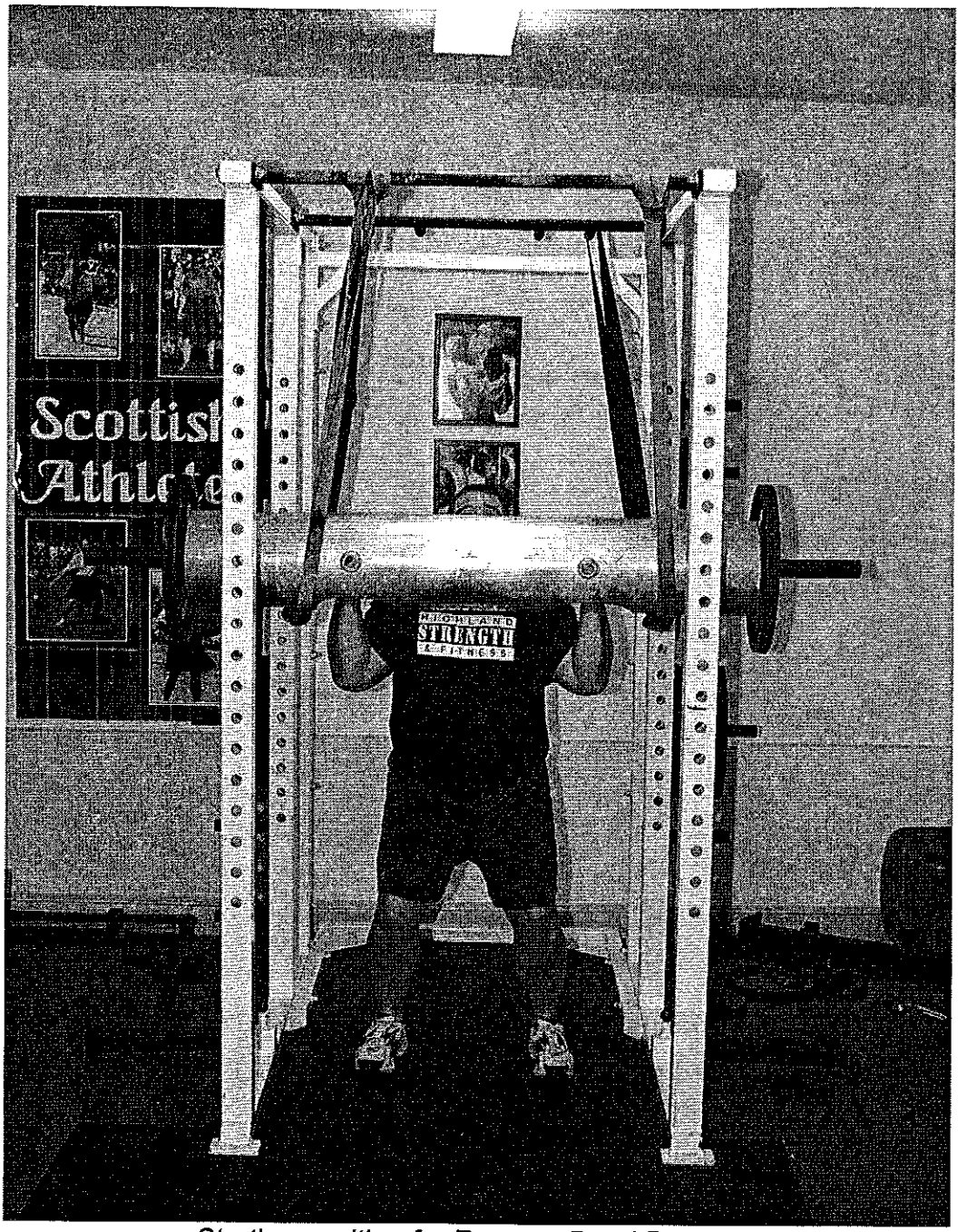


Finish position for Band Lockout with the Log

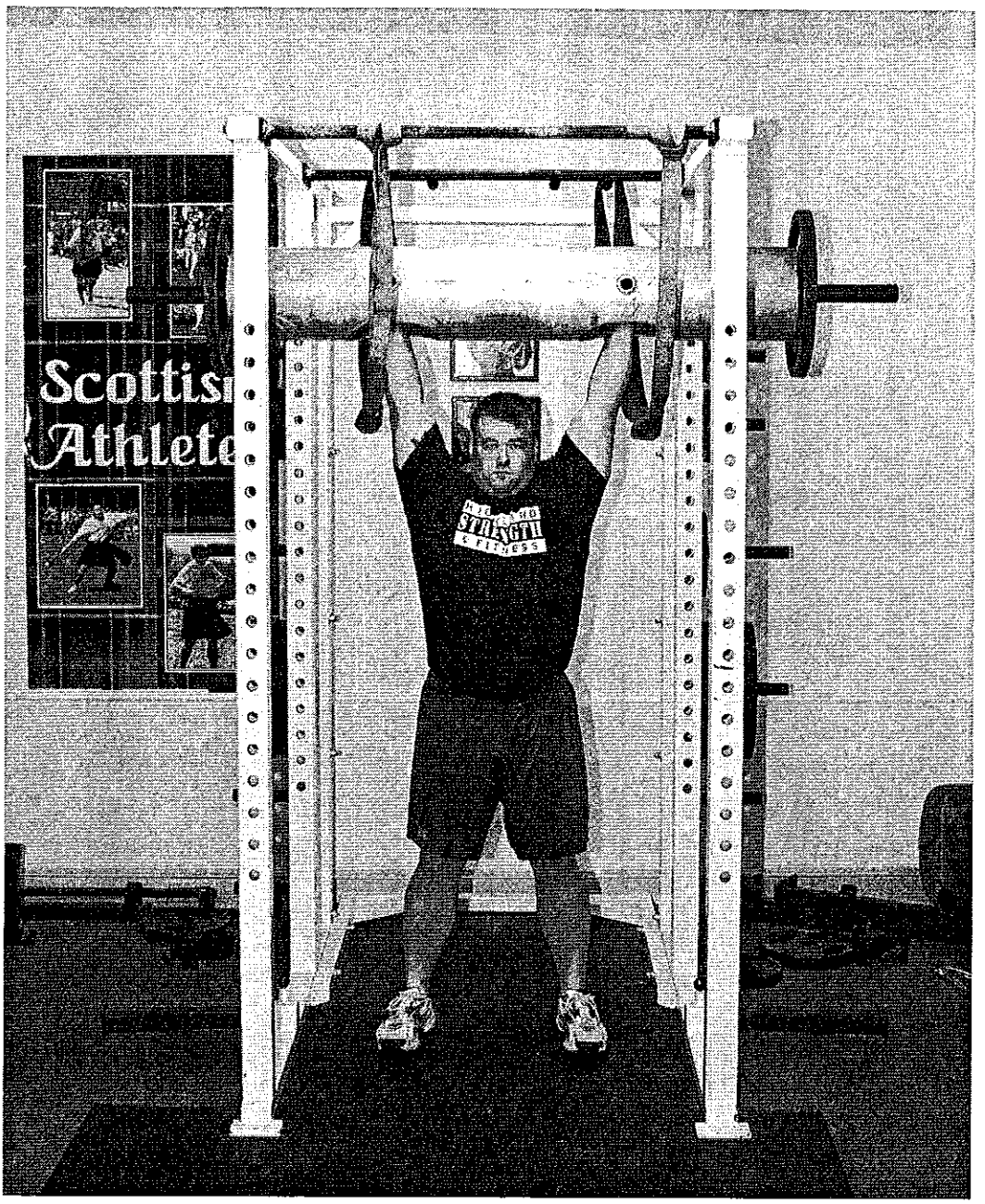
Reverse Bands Presses in Rack

- There may be situations when overloading the lockout position of a standing press needs extra attention.
- In this scenario, place the log in the power rack resting in bands that have been suspended from the top of the rack.

- A similar approach has been used by lifters at West Side Barbell with the dead lift and bench press for quite some time.
- As the weight increases, the log will descend lower and lower as the bands are stretched. Due to the assistance from the bands, the lifter need only support a portion of the entire weight of the log when it is in the shoulder position.
- This makes the initial movement much easier, and the lifter will be able to lockout in the vicinity of 115-125% of his or her regular pressing max.
- Because the drive is much more powerful and faster, more weight is handled.
- Locking out this supra-maximal weight can also have a significant positive impact on confidence levels.

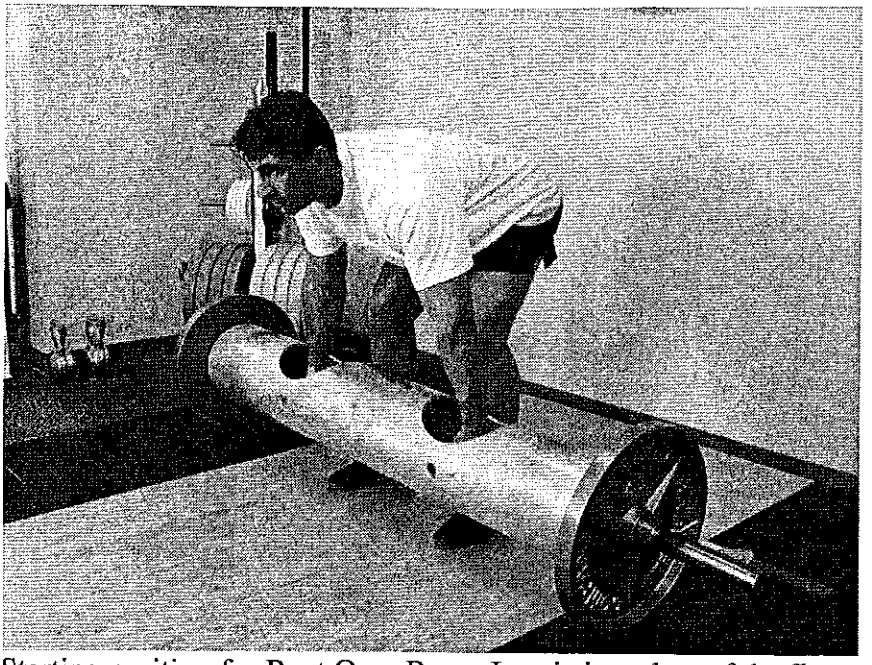


Starting position for Reverse Band Presses



Bent over rowing

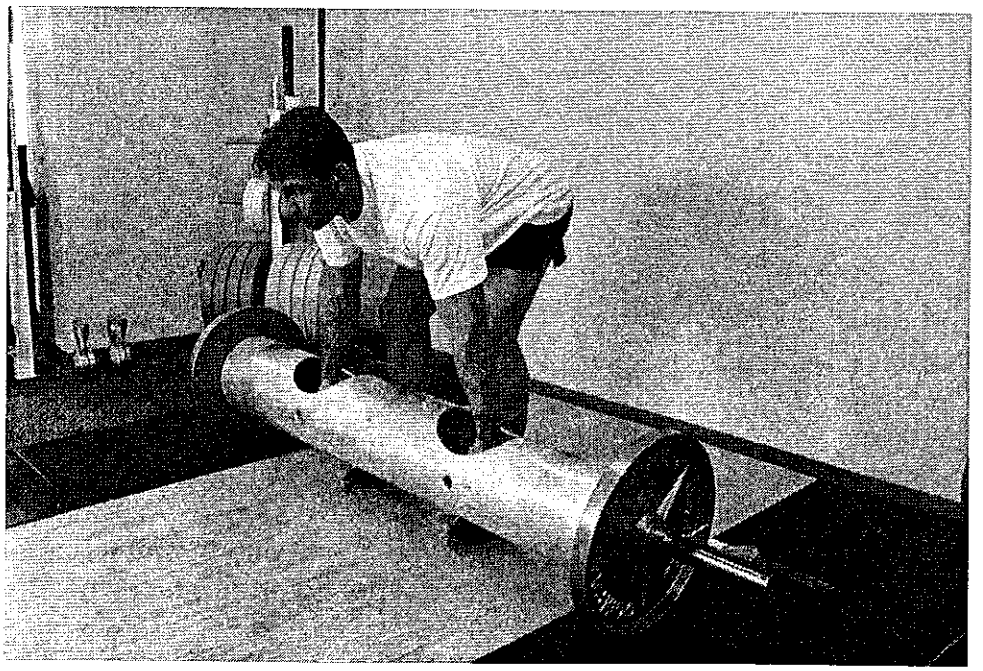
- This lift is performed exactly like the barbell version, but with the neutral grip.
- The elbow flexors are at their strongest involvement, thus more load can be handled and hence more resistance provided for back development.
- The increased log diameter, however, provides a significant challenge.
- This lift will fatigue the lower back area much more so than the barbell version. This fact needs to be considered during program design.



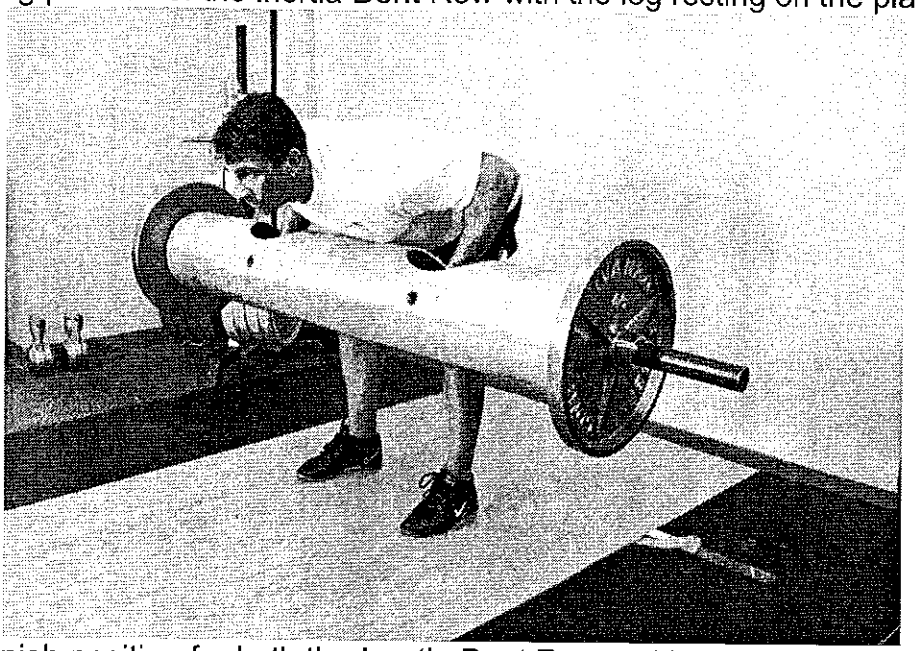
Starting position for Bent Over Row. Log is just clear of the floor.

Inertia Bent over rowing

- This is the explosive version of the lift above.
- With the log starting on the floor, the lifter dynamically pulls the log to the chest and then lowers it again to the floor.
- This version has the advantage of relieving the lower back of its supportive duties while training explosive power in the same muscle group.



Starting position of the Inertia Bent Row with the log resting on the platform



Finish position for both the Inertia Bent Row and 'regular' Bent Row

Clean and Press for time

- This is a great conditioner for mixed martial artists and grappling sports.
- In fact, it can be used as a predictor of sport-specific fitness for those sports.
- The athlete is given a set time period within which he or she must execute as many repetitions in the full clean and press as possible.
- It is important here that the log be fully locked out, and that the log touch the ground between every repetition (see sample program below).

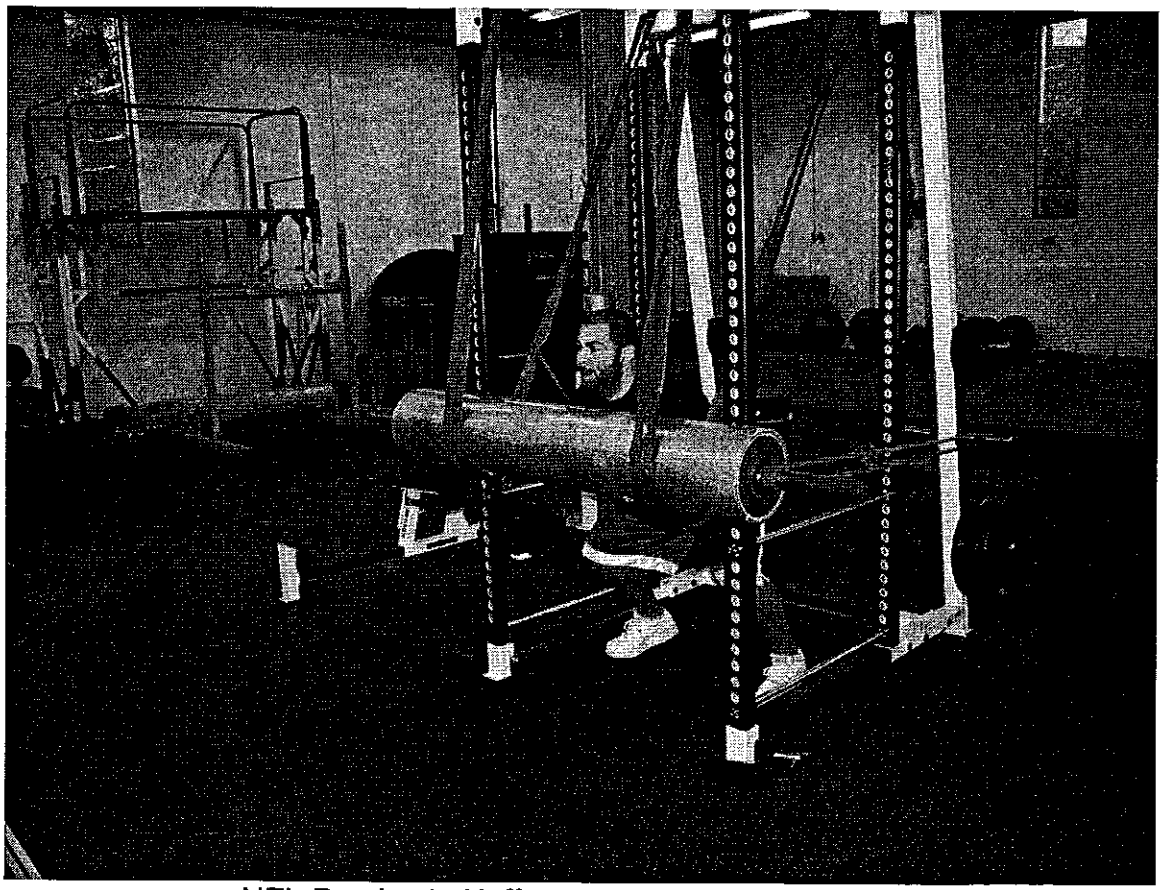
Log "Jammers" – Release version

- This exercise requires a padded landing area or a sandpit.
- Thick bumper plates such as the ones made by York or Kraeger are recommended
- The athlete first cleans the log to the lap position.
- From there, as the athlete rolls the log up to the chest position, he/she drives the arms hips and legs to full extension at approximately a 45 degree angle, throwing the log into the landing area.
- This excellent exercise has great transfer to any sport where rapid explosion is necessary.
- Light weights should be used here.

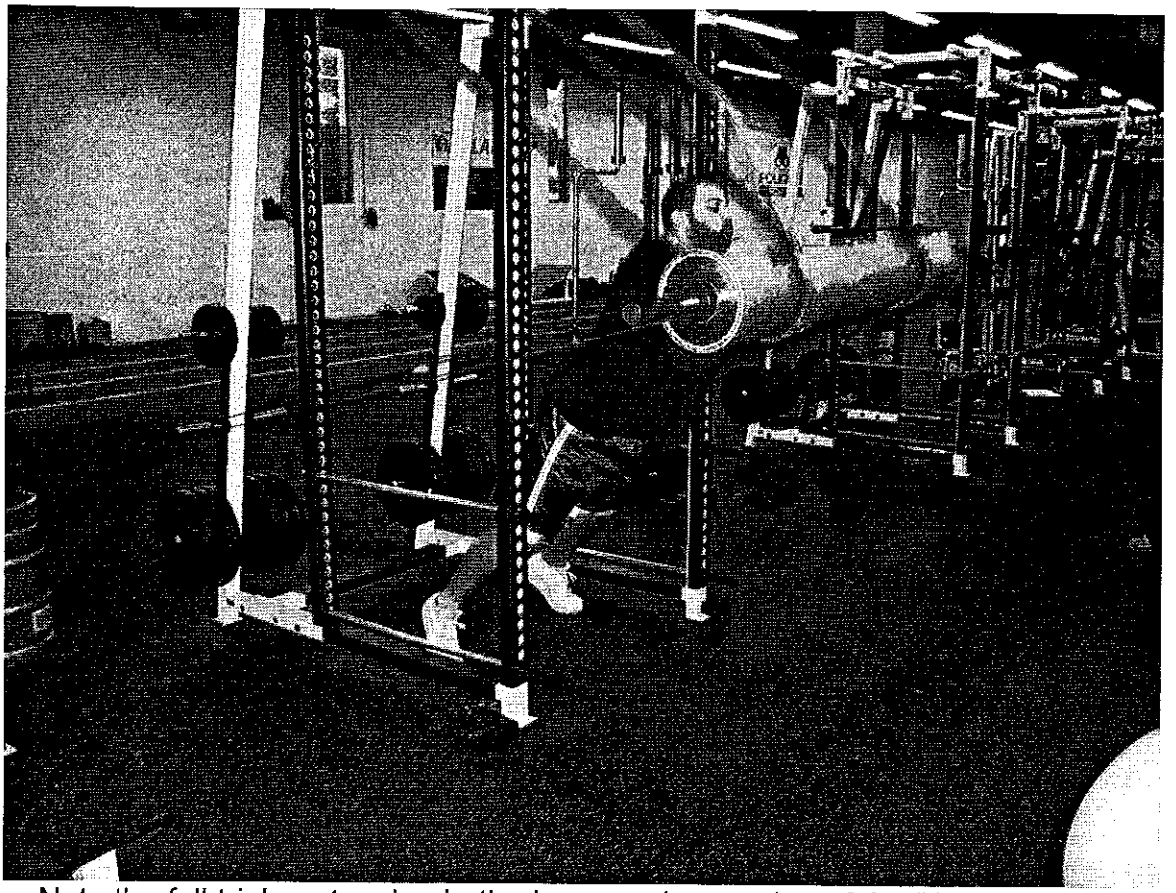
- The coach needs to make certain that the speed of the extension of the major joints is high in order to recruit the high-end fibers.
- Track and Field athletes have been doing variations of this exercise for ages employing barbells, logs and medicine balls, and "puds" etc.

Log Jammers – Rack Version

- This version requires a power rack, support straps.
- Additional tension can be applied via bands.
- Training can then be designed using traditional set and rep schemes.
- The athlete explodes forward and upward
- Band tension and log weight must allow for complete extension at the ankle, knee and hip.



NFL Pro Augie Hoffman sets up for the Log Jammer



Note the full triple extension in the inexpensive version of the "Jammer"

Strength Ratings:

- When the bar is held on the chest with knees locked, the male athlete should be able to use 66% of his best bench press performance for the same number of reps. Female athletes would use 45% of their best bench press performance for the same number of reps.

Routines & Progressions:

1. **For Offensive Linemen Boxers, and Shot-Putters**
   Inertia Incline Press in the Power Rack

   6 sets of 2-3 on a 22X0 tempo, rest 4 minutes between

   This would develop explosive strength, as inertia has to be overcome on every rep. It is a great exercise to develop pushing power

2. **For Mixed Martial Artists**
   Clean and Press for Time

   6 sets of 15 seconds of work, rest 120 seconds between sets.

   This would develop alactic capacity because of the incomplete rest intervals

3. **Football Conditioning**
   Rack Log Jammers

   10 sets of 3 with 45 seconds rest

   Focus here is again on alactic capacity using a "Westside Barbell" approach.

Chapter 6: Tire Flipping

Objectives:

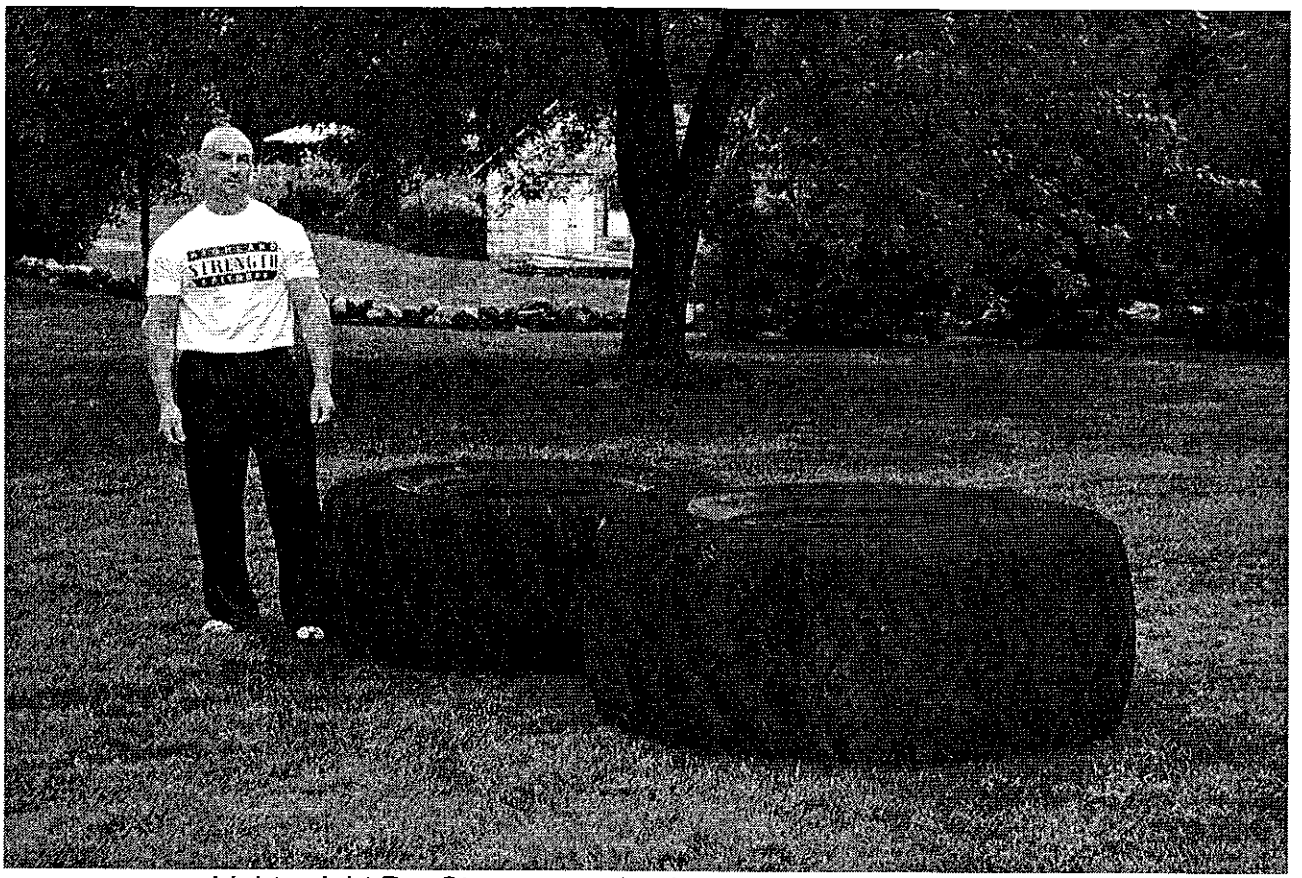
- To learn the athletic benefits of this event
- To identify the specific muscle groups used
- To understand the subtle technical details necessary to make this exercise effective.

Equipment:

Perhaps the easiest piece of equipment to acquire and the one most likely to provide the highest return, is the tire. The sets and reps in tire flipping are extremely easy to manipulate for anything from pure power work to extended lactic acid training.

There are only two down sides to this particular piece of equipment. One: There is no consistency between different "used" tires of the same model. Two, there is little possibility of small, controlled progressive jumps in overload as one would find with a barbell. Matching sets are virtually non-existent. While methods have been described regarding adding weight to existing tires by use of sandbags or by bolting plates inside the tires, neither is recommended nor very practical.

Used tires are considered hazardous waste and therefore truck tire dealers are eager to get rid of these. You should never have to pay for a used tire. See additional information on tire variances under 'Training Equipment Weight Ranges'.
When selecting a tire, one should only consider tires with an accessible lip around the edges for proper finger holds. Those with flat ridges present the danger unexpected drops.



Lightweight Pro Strongman checks out two ideal training tires

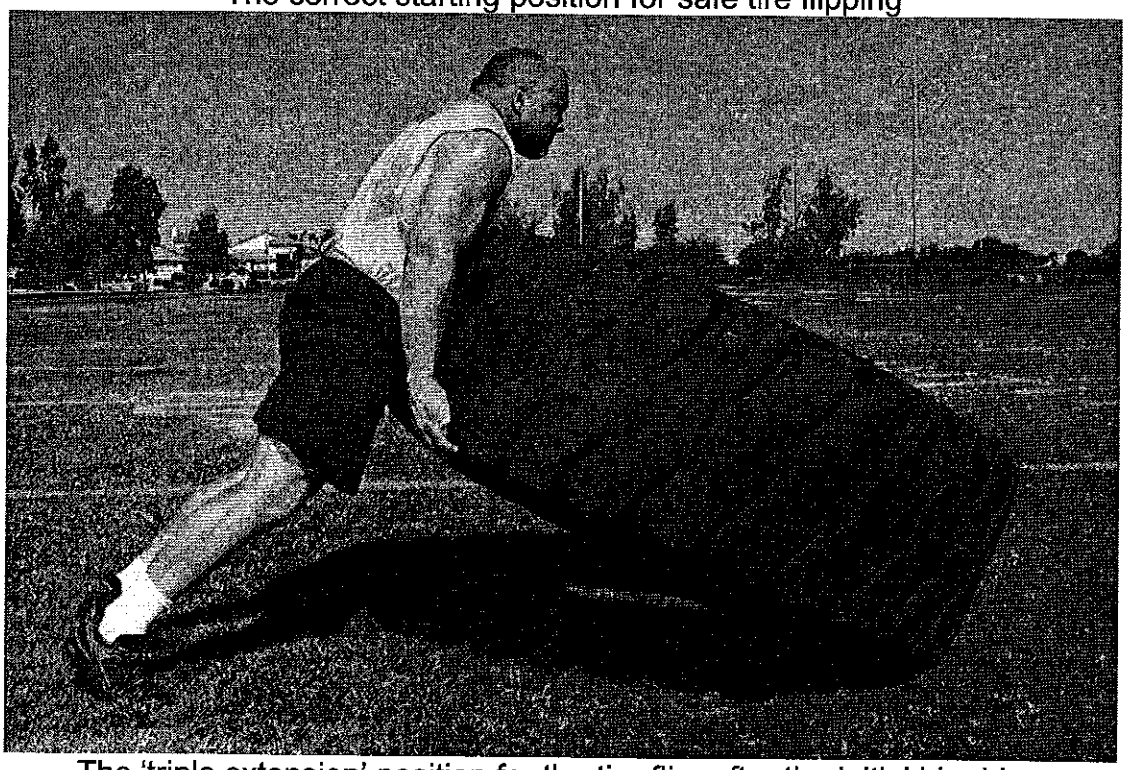
Technique:

Multiple articles have been circulated recently depicting horrendous techniques being employed while flipping the tire. The most common error is that of an athlete addressing the tire with the hands well inside the legs, the back in a sumo dead lift-type position and the feet very close to the base of the tire. This position results in a line of pull that is quite close to the vertical. Such a line of force has resulted in many torn biceps tendons. This is the single most common injury associated with tire flipping. The sumo style position is referred to as the "Bicep Tearing" position.

The classic INCORRECT starting position for tire flipping. Note the high hips, the chest NOT in contact with the tire as well as the wide foot position.

The correct approach is to lean the chest into the tire move the feet back roughly 2-3 feet away from the base of the tire (depending upon the overall height of the athlete) grasp the tire with the hands on the outside of the feet. This will generate an automatic forward lean into the tire. One reliable indicator of correct tire size is the ability of the athlete to maintain solid contact with side of the tire throughout the initial drive phase.

The correct starting position for safe tire flipping

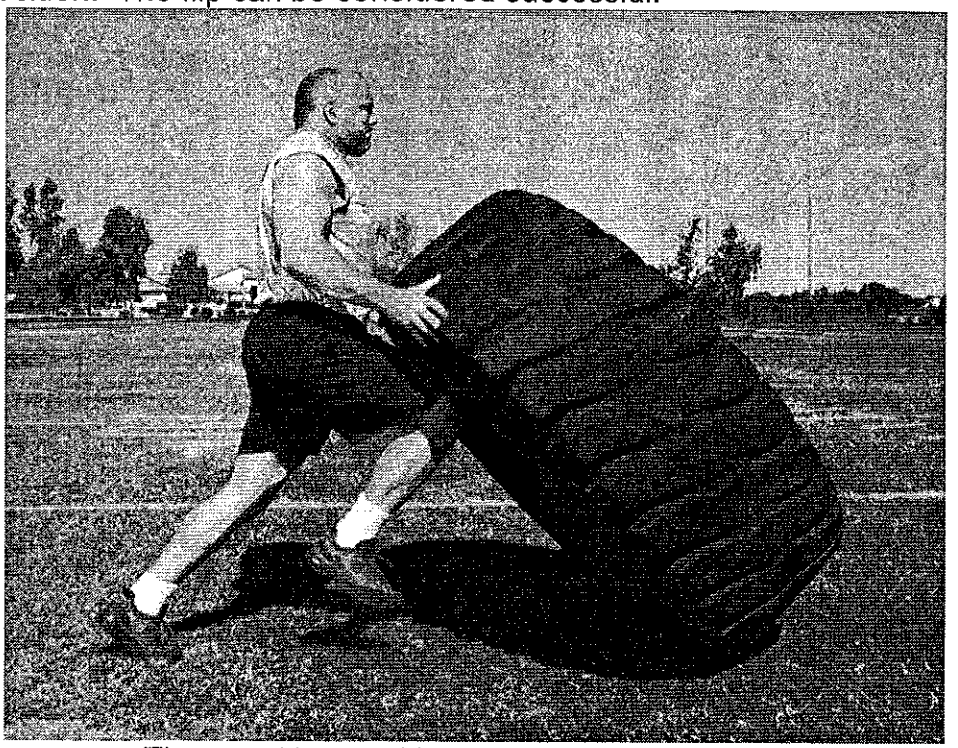


The 'triple extension' position for the tire flip, after the initial hip drive

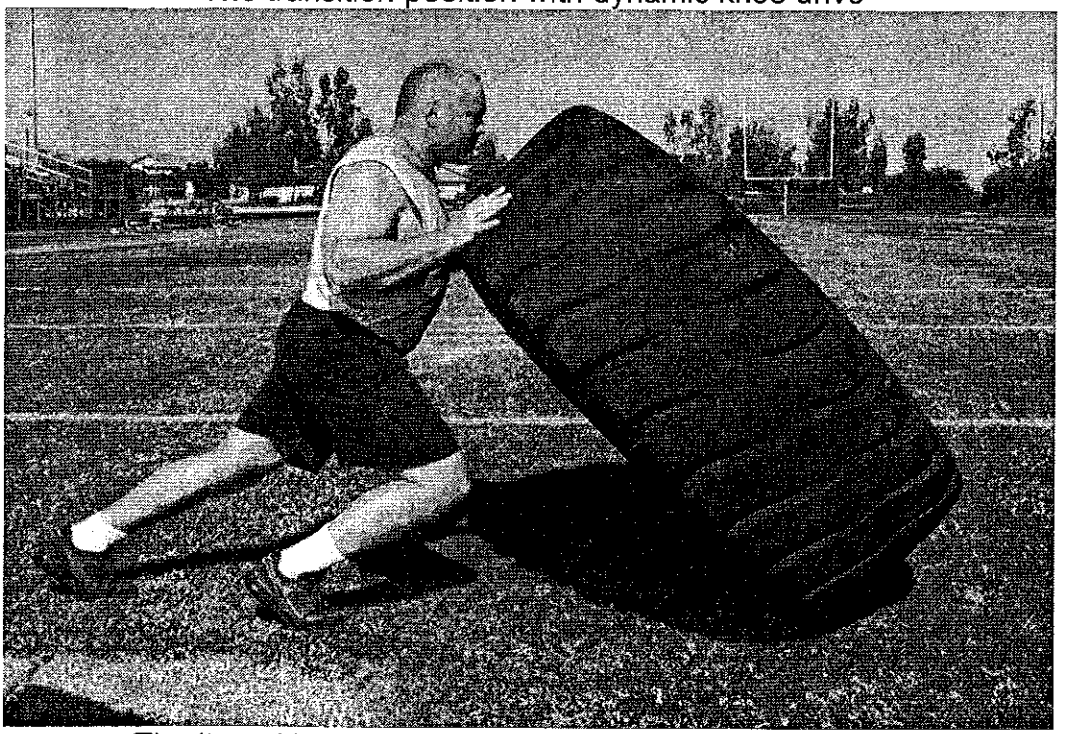
When in the correct position, the athlete's chin should rest on the top surface of the tire. Keeping the hips low, the athlete will drive the hips, knees and ankles to full extension. If this action sounds remarkably like an Olympic lift, then you have a correct understanding of the movement. The properly executed tire flip can be referred to as a power clean at a 45 degree angle. Once the triple extension is complete, the athlete should then be able to drop into the catch or transition position. This largely requires the feet to move into a split

recovery-type position and the hands to move from an underhand starting position to an overhand driving position. The tire is then forcefully driven into with the base of the hands and pushed over end to the ground once again.

As a general rule, once the hands are able to rotate from an underhand position to and overhand position. The flip can be considered successful.

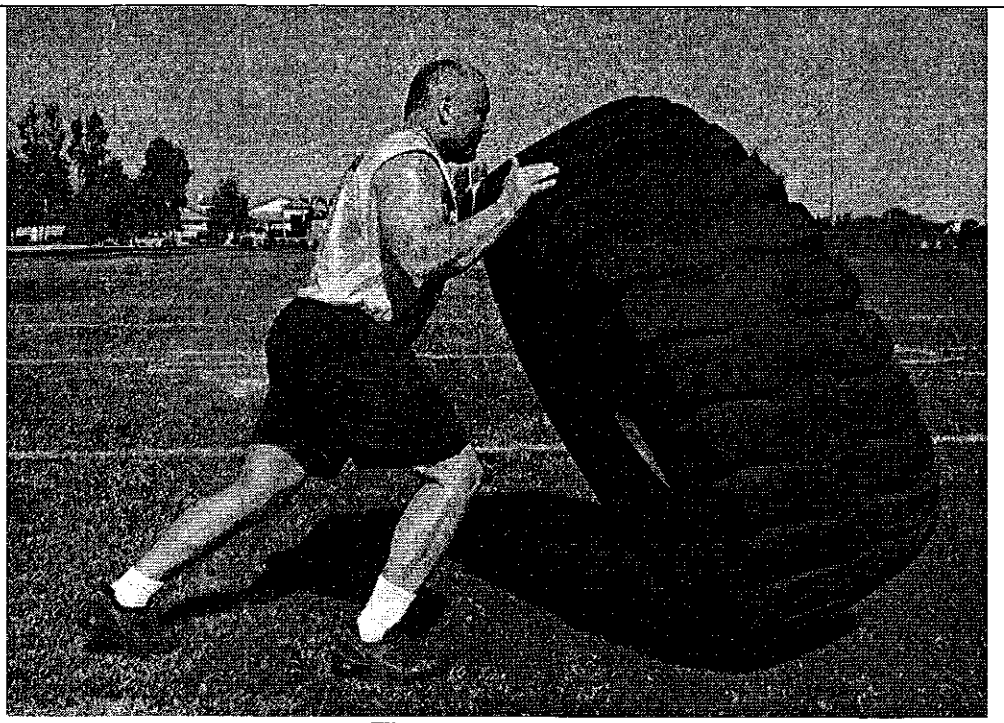


The transition position with dynamic knee drive

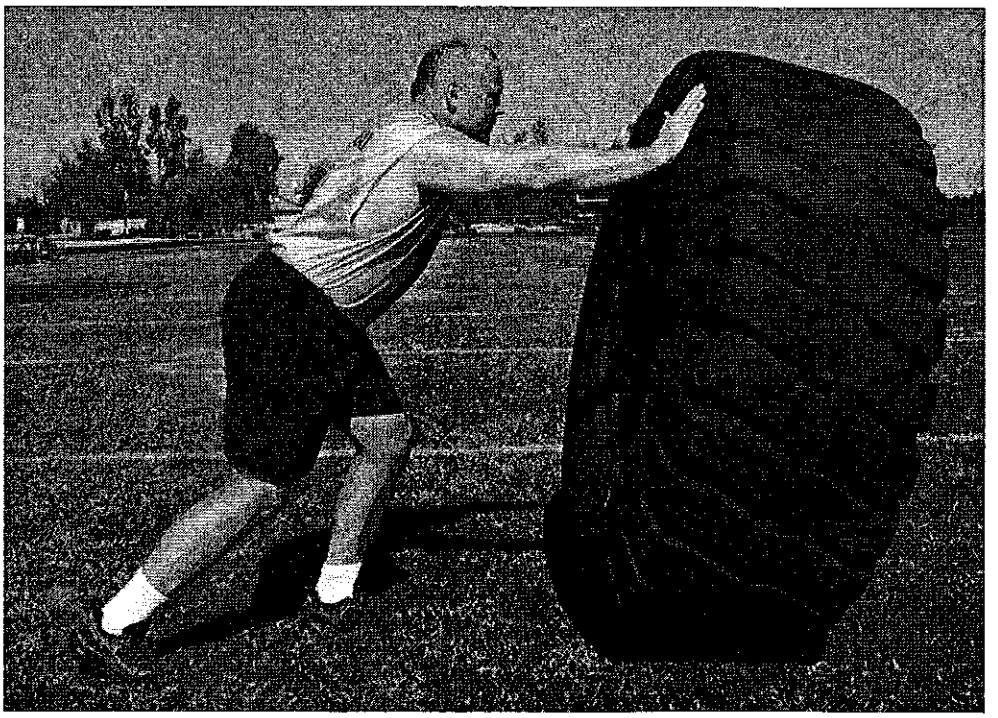


The 'transition' position of the tire flip *without* knee strike

NOTE: Please do not attempt to use the biceps to lift the tire from a low position. It is generally not considered wise to bicep curl 500+ pounds. A biceps tear can easily result. As stated above, biceps injuries are the single most reported injury with this tool.



The catch position



The arm drive finish position

Applications:

There are very few sports for which the tire flipping exercise would not be applicable. Due to the low pulling position involved, basketball players are one group that may find tire training to be impractical.

Virtually all other sports will derive some benefit from tire work, with particular benefit seen for contact sports. The posterior chain is remarkably well targeted during tire flipping. It has therefore been correctly prescribed for sports requiring sprint speed and explosive movements with the hips in addition to its obvious benefits for energy system work. Perhaps the only other functional training tool the can be compared with tire flipping is the "lumberjack" tool popularized by Canadian Olympic lifting coach Pierre Roy. See Appendix B.

One use of the tire that does not involve flipping is referred to as "Tire Fighting". This activity has been popularized by Canadian Strength Coach Larry Justanis. In this activity, the tire is stood upright. One athlete stands on each side of the tire. At a pre-determined signal, each athlete attempts to push the tire towards his opponent. It must be pointed out, however, that the tire should be fixed with cable or rope of time sort overhead in order to avoid the tire falling upon an athlete. It is easily possible for one opponent to slip or simply be overwhelmed and fall to the ground. A large tire falling upon an extended leg can obviously cause significant injury. This exercise should only be used therefore with caution and in the presence of appropriate safety measures. It will, however, allow for some very highly competitive scenarios.

Energy system training

The tire is arguably the top endurance training and/or functional training exercise for American football, rugby and mixed martial arts athletes. It should be considered one of the top endurance exercises in general. There are still some outdated football coaches using a mile and half run for linemen as a test of fitness and mental toughness. Aerobic testing for football makes as much sense as giving a Japanese exam to measure German language knowledge. It has zero value in terms of information gained and at best only injures the larger athletes.

If one wishes to argue that aerobic testing is a test of mental toughness for lineman, we would counter that the athlete who fights out the last 3 flips of a 10-flip series with an 800 pound plus tire has superior "toughness" over the athlete who plods through the last 200 yards of a 1.5 mile run. In short, the tire training exercise tests both preparedness and mental toughness far better than other age-old techniques.

Training Equipment Weight Ranges:

It must be kept in mind that tires vary considerably in diameter, thickness, content (steel belted radial), wear, tread design and texture. Here are some rough guidelines for selecting the correct tire for a given target group of trainees.

325 to 400 lbs. for women and smaller male high school athletes

400 to 600 lbs. for larger high school and collegiate athletes or for professional women strength athletes

600 lbs.+ for collegiate linemen and professional athletes.

Tires below these ranges have very little training value. Athletes finding tires below 300 lbs. in weight to be difficult to work with are not physically prepared for tire training. Tires in excess of 700 lbs. should be considered excessive for collegiate athletes given the potential for injury versus possible training benefit.

Additionally, one of the most important factors for tire selection is the 'profile' or width of the tire. This is the height of the tire as it rests flat on the ground, on its side. As a general rule, tires having a width of less than 20 inches are too low to achieve a safe position with for either male or female athletes. The athlete's chin should be resting on or just above the top surface at the start of the drive phase. The chest and upper arm of the athlete must be resting solidly against the side of the tire as well. As mentioned, if the chest extends too far above the height of the tire, the arms are forced to bear much of the actual tire weight and injury can easily result. The chest should be the point through which the majority of the force passes to the tire.

Exercise Routines:

Suicides

Here, three athletes rotate turns flipping the tire without rest. Each athlete performs 3-5 rapid flips and the next athlete then steps in and continues the rotation. This should be repeated 12-15 times for conditioning. This will improve anaerobic alactic capacity

Interval training:

30 seconds (roughly 4-6 flips)
rest 90 seconds.
Repeat 3-4 sets
This will improve anaerobic lactic capacity

Power Training:

3-5 flips for shortest time.
Rest 3-5 minutes.
Repeat 5-6 sets.
This will improve anaerobic alactic power

Football Tire Fighting

15 seconds of pushing
Rest 30 seconds
Repeat 10 times
Rest 4 minutes
Repeat Cluster 3-4 times

Mixed Martial Arts Tire Fighting

30 seconds of pushing
Rest 60 seconds
Repeat 12-16 sets

Chapter 7 Endurance Complexes

Objectives:

- To see how these events can be used together to increase local muscular endurance.
- To employ the rules of 'specificity' while increasing local muscular endurance.

Course Summary:

The unique aspect of functional strongman training lies in its versatility. Because the modality itself is based on true functional movements using various objects and implements in a more realistic competition environment, the training becomes highly transferable. This is crucial when dealing with sport-specific endurance. Studies have shown that in order for aerobic training to have a benefit to a given sport, the method used to develop this aerobic capacity must be as closely related to the sporting movement as possible. In other words, the adaptations must occur in the same motor units.

It has been well documented in scientific literature that aerobic adaptations are not only central but also peripheral in nature. For example, training on a bike to improve endurance for a kayaking event is somewhat limited in effectiveness by bits lack of specificity. Hence, having these particular athletes do treadmill or some other form of aerobic training not resembling their sport movement can largely be a waste of time, particularly for sports where endurance is needed in multiple planes and a wide cross-section of different muscle groups such as wrestling. It makes more sense to have the athletes use more functional aerobic work, particularly in a collegiate environment where training hours can often be limited by class schedules or even NCAA regulations.

That being said, the movements discussed here can be combined to form the basis of an endurance training program that will provide the greatest athletic transferability.

The exercises that may lend themselves to complexes are tire flipping, farmer's walk, sled dragging, super yoke and a new addition, loading events. In general, loading events in traditional a strongman setting come in the form of stone lifting. However, these events are not recommended for athletes in other sports, due to safety concerns and practical equipment issues. Instead, sand bag and/or keg-loading are the preferred options.

Some typical combinations would be:

1. Carry (sand bag, FW, super yoke, keg) and drag (sled)
2. Flip (tire) and drag (sled)
3. Carry and load (sand bag, keg)

These few movements can be combined into several different patterns depending upon the desired localized muscular endurance desired...or depending upon how much lactic acid tolerance (read "pain") the coach wishes to place upon the athlete.

Time frames

A typical football lineman executes a play roughly once every 30 seconds. While the play itself is brief, he must be conditioned to repeat this effort without a decrease in performance repeatedly throughout the course of an entire game. Therefore, his alactic capacity must be on a par with his one-time alactic power to be effective during the game. In order to develop this quality, the following parameters are recommended for a typical collegiate level lineman. Other sports will follow with subsequent increases in the time of execution.

Football: Bottom Position Squat and Tire Flip Clusters :

- 1 Bottom Position Squat or Blast Start with yoke
- immediately follow by 2 flips with a large (600#+) tire
- Total time for event completion: approx. 6-10 seconds
- Rest 30 seconds between complexes and do 8-12 complexes
- Rest 5 minutes between clusters and do 4-5 cluster sets.

Rationale: On any given play, the lineman may be required to block/shed a block multiple times, particularly if that play involves pursuit of any kind. The 'Bottom Position Squat' will duplicate the neural demands to come off the start. The tire portion of this combination will simulate the subsequent blocks extremely well. This complex duplicates the energy system demands of the football lineman.

Grappling sports should follow a similar approach using sandbag tosses to simulate an opponent. Since the work period of a wrestler, football player, hockey player, soccer player, etc. vary significantly, work/rest ratios should be changed accordingly.

Here are some suggested routines:

Hockey: Farmer's Walk (grip, unilateral movement, lower body/upper body combined sport requirements) and Bent Over Hamstring Drags – Single or Dual Sled version (skating, local muscular endurance).

Routine:

- Farmer's Walk with an offset foot start for 150 feet. (This will take approx. 25-35 seconds with a reasonable load)
- Next, pick up the sled for the bent drags for a return trip of 150 feet.
- Total time to completion = roughly 45-50 seconds
- Rest 90 to 120 seconds between sets.
- Repeat for 6 sets.

Rationale: The typical shift in ice hockey lasts 45 seconds. This is addressed by the 45-second load on the entire body with the combined FW and sled work. The rest interval in this case will mimic the lactic acid capacity demands of a standard shift rotation pattern seen in hockey game.

Baseball: Farmer's Walk (Grip, upper back, unilateral basis) and 1 Arm Backwards Sled Drag (single-sided dominant sport)

Routine:

- Farmer's Walk 150 feet (this could also be an Unbalanced Walk if muscular asymmetry is present.
- 1 Arm Backwards sled drags for return trip of 150 feet.
- Total time to completion = approx. 45 seconds.

Rationale: While the true conditioning needs in baseball are minimal, speed and trunk power is required in short bursts of ball pursuit and hitting. In addition, at the professional level, the more highly conditioned athlete will be better prepared for the extensive length of the season and the frequency of travel and competition. Actual strength gains possible in the obliques have been shown to be limited. Increases in hitting power come from lat strength gains. The unique nature of single arm drags addresses lat and shoulder stability. Ball and bat grip strength requirements are sufficiently addressed by the Farmer's Walk.

Soccer: Side to Side sled drags (ab/adduction of hips) combined with Bent Hamstring Drags and then Backwards Sled Drags.

Routine:

- Bent Over Lateral Sled Drags for 50 feet
- Repeat facing in the opposite direction for another 50 feet.
- Bent hamstring drags for 150 feet
- Return trip for 150 feet Backwards Drag
- Total time to completion = 1:00 – 1:30.
- Rest 3 minutes then repeat.
- Complete 10 sets

Rationale: The aerobic requirements for soccer are much higher than in most other sports, with much of the work coming in the form of short burst of speed in many different directions. Each of these planes is addressed along with a longer time to completion for each set. The minimal work to rest ratio will generate a challenging interval training effect.

Mixed Martial Arts I (Tire flip, Log and Sled drag)

Routine:

- Tire Flips 3 reps.
- Standing Log press 6 reps.
- Sled face pulls 6 steps each leg
- Total time to completion = 40-60 seconds.
- Rest 3 minutes then repeat.
- Complete 5 sets

Rationale: By using a variety of muscle groups, blood lactate levels skyrocket. Every single muscle is involved in this complex. It is a great conditioner for athletes do not have access to many different training partners to grapple. It provides them superior energy system work.

Mixed Martial Arts II (Log, Super Yoke and Sled Drag)

Routine:

- Standing Log Push press 4 reps.
- Super-Yoke side to side pendulum walk 6 steps each direction
- Shotokan Back ward walks 6 steps per leg
- Total time to completion = 60-70 seconds.
- Rest 3 minutes then repeat.

- Complete 4 sets

Rationale: Great complex to improve anaerobic lactic capacity. Again, because of the multitude of muscle involved, lactate levels are unbearable. Every physical quality is developed from explosive strength to developing the capacity to maintain speed in fatigue conditions.

Note: Sled work, in particular Backwards Sled Drags, is always done last due to extreme fatigue and loss of stability which may be required for other events.

The number of permutations of complexes is limitless. It is only limited by the strength coach's imagination. As a rule of thumb, to do the complexes 6 workouts in a row before changing them.

Appendix A
Strongman Equipment Resources

1) Mastiff/Power Lift equipment

sales@mail.power-lift.com

2) www.brutestrength.com

Brute Strength Equipment

1908 S Marday Ave.
Sioux Falls, SD 57103

Phone: 605.274.8631
Fax: 413.638.6236
Email: lance@brutestrength.com

3) www.elitefts.com

Elite Fitness Systems

138 Maple Street

London, Ohio 43140

Phone: 888-854-8806

Sleds, logs and thick bars

4) www.newyorkbarbells.com

New York Barbells of Elmira

160 Home Street

Elmira, NY 14904

1-800-446-1833

Plate-loaded Farmer's Walk, Various Diameter Logs,

Plate loaded Yokes, various grip equipment

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$49.95 Canada