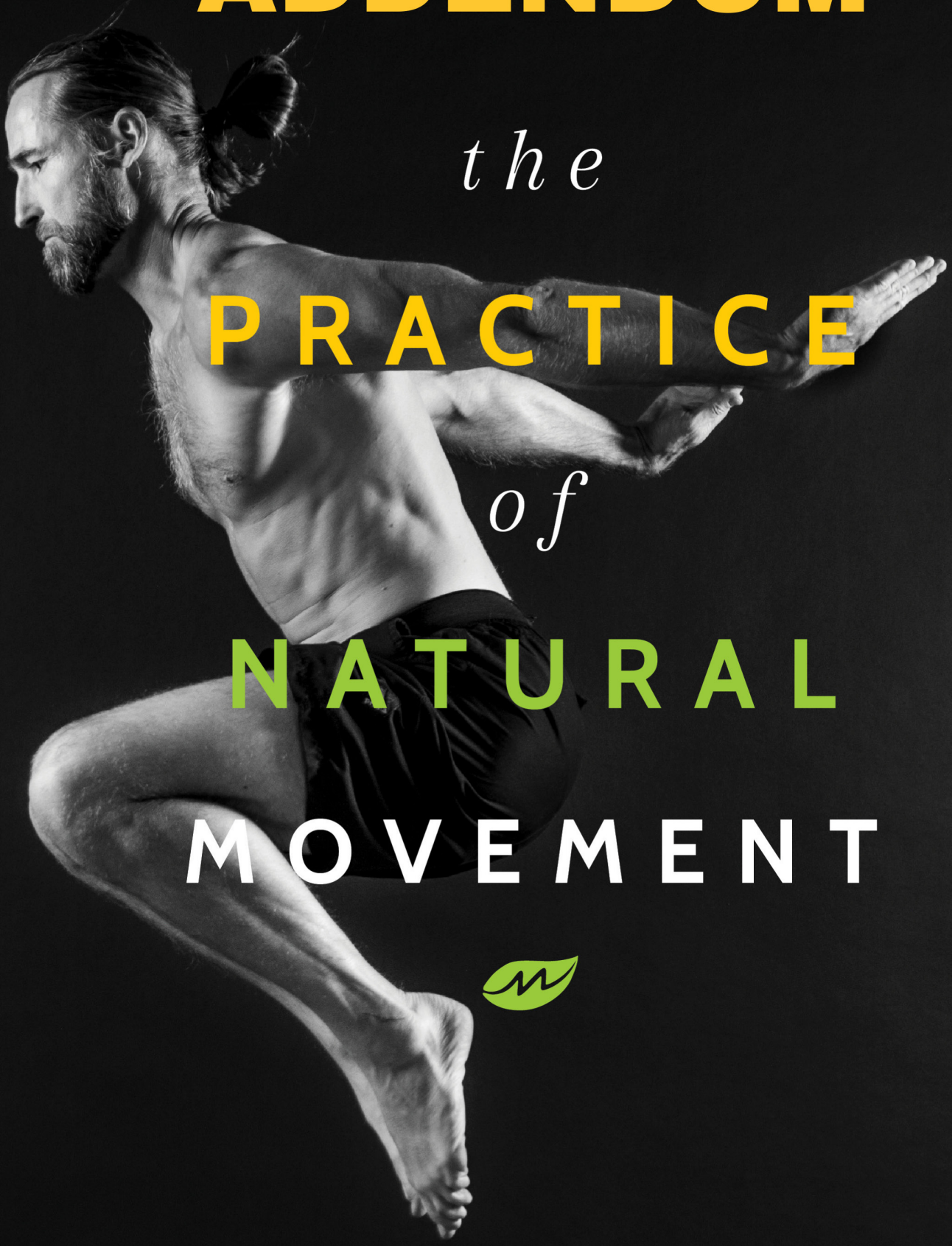
ADDENDUM



the PRACTICE *of* NATURAL MOVEMENT

RECLAIM POWER, HEALTH, AND FREEDOM

By ERWAN LE CORRE, *Creator of* MOVNAT

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Introduction

The Practice of Natural Movement book started with the idea that Natural Movement® can and should be accessible to everyone.

Natural Movement represents so much more than a mere collection of movements, drills, or exercises, but an entire paradigm shift built upon many key principles. Codifying this “new way” into a book was a monumental task, which could have involved multiple volumes to cover the vast amount of material inherent to Natural Movement.

Fortunately, these principles, movements, and other practices have been codified into the MovNat system for years, and are now thoroughly explained in The Practice of Natural Movement book. But the fact remains: you can only fit so much into one book. And to meet my book publisher’s guidelines, I had to omit a lot of material that I hoped to include.

In these pages to follow, you’ll find ample instructions for dozens of natural movements along with additional material on Capacity Training and Benchmarks, among other topics.

My hope is that you will work through the chapters, practice the movements, and soak up the lessons I’ve spent a lifetime learning.

My team and I are so humbled that our work has impacted so many lives, and we are grateful for your support as we endeavor to shape the future.

- Erwan

Conclusion to the Manifesto

This page would have appeared after Page 97 in *The Practice of Natural Movement* book.

Manifesto Conclusion

I hope that reading about the twelve principles have answered most of the questions you have had about Natural Movement and helped you build a clear notion of what it is. Although Natural Movement is part of "movement" as a whole, not all movement is natural. Using the principles I've outlined, you can assess the level of naturalness of any physical practice. Following are some questions to ask yourself:

- Are the movement patterns you practice evolutionary and universal?
- Are your movements artificially or traditionally shaped?
- Do you limit them to a single natural movement aptitude that you systematically perform exclusively and in a very specific manner?
- Do you use movements mindlessly for the sole purpose of physical exertion?
- Are the movements directly useful in a practical way, or is the usefulness of the movement restricted to an indirect benefit?
- Do you interact with the environment and have an obligation to adapt to a real-world context, or do you perform the movements removed from external variables and demands?
- Do you practice strictly in particular environments that are overly simplified and predictable?
- Could you use the movements to help others in tangible way, such as saving someone else's life?

The more negative answers you have for these questions, the less natural your movement practice is. However, if you still want to call your practice "natural" or even "natural movement" because your view is different—it can be challenging to let go of the romantic idea that a discipline is "natural" when it actually isn't—that's your call. After all, "Natural Movement" is a term used for unshod horses as well as for letting curly hair grow long and free. But when it comes to physical practice, we need to have a rational and objective reason for labelling movement "natural." Otherwise, if anything goes, why use the word "natural" at all? We simply could say movement. Yet, movement really could apply to anything. Movement does not tell you what kind of movement. All kinds of activities—skateboarding, circus juggling, yoga, bodybuilding, capoeira, and gardening—are movement. Natural Movement implies principles that makes the use of the word "natural" objective and meaningful and the term Natural Movement more than a subjective interpretation.

My goal in sharing these principles is to make you think, reflect, and question, and I hope to have inspired you to view fitness, exercise, and movement practice differently. If you have already found your own way, it's beautiful. If my insights have inspired you to experiment on a new practice, or if you feel that you have finally found what you've always been looking for, power to you: I have accomplished the first part of my mission, which is to give Natural Movement the meaning and place it deserves.

"You have your way. I have my way. As for the right way, the correct way, and the only way, it does not exist."

—Friedrich Nietzsche

The material in Chapters 24 and 26 below were originally included in Part 3 of *The Practice of Natural Movement* book, in the section "Practice Efficiency Principles" (i.e. page 153 to 191).

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Capacity Training

To this point, we have learned about the principles that make movement efficient and how to practice efficiently so we can indeed achieve movement efficiency. We have learned about progressions and how we can develop strength, conditioning, and other physiological adaptations through the progressively more difficult practice of our movement skills; in other words, we can develop the two main aspects of our physical capability—competency and capacity—without necessarily separating both, and that such an organic, wholistic, auto-regulated approach might be the most effective method for beginners.

> **"We do not rise to the level of our expectations. We fall to the level of our training."**
>
> *—Archilochus*

However, the same way we can practice with a single emphasis when it comes to technique, say improving a particular jumping technique, we also can dedicate training sessions to specifically achieving greater aspects of our capacity, be it strength, power, or stamina. What I call capacity training is conventionally known as strength and Conditioning (S&C). Capacity training may not be a priority for most beginners, and again it is in no way a prerequisite to practicing and progressing in Natural Movement skills, yet it doesn't mean that beginners cannot benefit from also emphasizing capacity training along with skills training. You can start capacity training at any time you see fit.

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Aside from your personal physical real-world capability to the next level, another benefit of increasing capacity is making low-intensity movements easier so you can stay fresh much longer when you are practicing technique.

Strength Training

We all need strength, in so many ways, all the time. From a practical Natural Movement perspective, we need strength to perform movements regardless of intensity, but clearly we need it to be as effective as possible at practical tasks, especially those that demand great levels of strength. Before putting energy in acquiring extra strength, ask yourself, "Do I have the motor control required to optimally and safely utilize greater levels of strength ?" "Too much" strength implies a significant mismatch between the strength levels you have developed and the movement skills that are necessary to handle such levels. In short, concern about how good your movement is should precede concerns about your strength levels. Once you have established a reliable baseline of movement competency—and have already developed greater levels of strength organically through the process of developing movement skills—then a concern for your levels of strength starts to make a lot of sense: Do you possess the capacity that will bring your competency to the next level of capability?

If you're skilled at lifting but not physiologically very strong, you can lift light loads efficiently. If you lack the strength required for some explosive climbing movements such as the Pop-Up or Power-Up, you're limited to techniques that are less demanding in strength but that take significantly longer to accomplish. In both examples where strength is lacking, an extra amount of technical efficiency will help.

You must train the multiple kids of strength addressed below to increase your capability by enhancing your capacity. Thanks to greater strength, you can lift and carry heavier loads over a longer distance. If you are skilled at jumping, then extra power—either gained through Power Jump training or by training heavy explosive lifts—will not make you jump more technically, but it will increase your jumping distance and performance, which makes you more efficient overall. Gaining superior levels of strength through specific drills, particularly through manipulative movement drills, not only serves the practical purpose of helping you manipulate heavy objects but it also contributes to greater performance at many other movement skills.

Progressive Overload

To achieve the goal of increasing (or at least maintaining satisfying levels of) physical strength, muscles first must be "loaded," which means contracted and stressed through resistance. This has to be done at a level of intensity close to the maximum amount of force the muscles can produce to trigger "supercompensation" (the physiological adaptation process necessary to increase strength levels). Secondly, such intense loading must be frequent enough and the level of resistance must become progressively greater over time to ensure continuous gains.

This simple concept is the most important principle in strength training, and is called progressive overload. Progressive overload is basically about ensuring continuous overcompensation, a process that is completely in line with the Progressive principle of Natural Movement and that is also similar to how gains in movement performance are achieved through the VIC approach (progressive increase in volume, intensity, and complexity). Progressive overload builds greater strength, but it also contributes to making your bones, cartilage, tendons, and ligaments stronger so your musculoskeletal system can handle heavier loads and greater intensity (which is a physiological adaptation that already takes place through the practice of Natural Movement but is increased significantly through heavy loaded manipulation).

Starting Point

Your starting point is easy to figure out: You have to test your maximal strength in a particular movement—for instance how much weight you can deadlift, if you can pull in a Pull-Up (or if you can perform a Power-Up), what's the maximum depth you can handle safely in a downward jump landing in a Square Stance, and so on. Indeed, there are different levels of strength, and they aren't all measured in terms of external weight resistance. Again, if you have no practice yet and haven't improved your movement efficiency, technique, and overall physiology, function, and health through the technical practice of Natural Movement, you ar

en't at a stage where strength training matters. But if you have been practicing Natural Movement and have already acquired movement efficiency and basic levels of strength and functional health through it, or if you are well-versed in strength training, you're ready for specific strength training. In fact, strength development will primarily stem from training the Manipulative aspect of Natural Movement with greater intensity and volume.

During the first weeks and months of training, strength gains can be very fast and sometimes spectacular in dedicated beginners who have no strength training background, although the gains might not take place linearly because of increased efficiency at the neuromuscular junction. Experienced practitioners achieve much slower progress, and their approach to training might need to become more specific to keep producing notable results. The wonderful thing about strength, which is also true for any physiological adaptation as well as for motor skills, is that once you've acquired a certain level, that level will be much easier to recover than when you're developing it for the first time.

The following information below enables Natural Movement beginners who are completely unfamiliar with strength training to understand how to approach this particular area of their practice. You also will learn how training specific aspects of strength may have more to do with the improvement of energy systems than with a strict increase in strength.

DEFINING SET, 1RM, REP, REST PERIOD

A rep is a single repetition of a given movement.
A one-repetition maximum (1RM) is the maximum amount of weight you can lift in a single time and it's considered the maximum amount of force you can produce in a given movement. Knowing that limit is very important because it gives you a practical sense of your strength capacity and the maximal level of intensity you can handle without failing, and also because you can determine a level of intensity at which to train based on a certain percentage of the 1RM.
A set is a sequence made of a specific number of consecutive repetitions of a particular movement. A combination of sets and reps at a given percentage of the 1RM reads as follow: 3x5 85%(3 sets of 5 reps at 85% of the 1RM).
A rest period is the specific duration of the breaks you take in between each set.
Volume represents the number of sets and reps you perform, whereas intensity represents the amount of resistance at which you train, usually measured in weight.

*Other variables may play a part other than the particular movement you're doing, such as the kind of object you lift (shape, weight distribution, and grip/hold) or where you lift (terrain).

Types of Strength Training

As discussed in Part 2, "Movement Efficiency Principles," the strength we need for Natural Movement is adaptable and produced through diverse kinds of muscular contractions so we can accelerate, decelerate, hold, or transition as we perform practical movement tasks. So when it comes to training strength, your final question should be, "What kind of strength do I need for this particular aspect of my Natural Movement performance?" The answer helps you choose the kind of strength training that replicates such specific need and demand the closest. Each particular type of training below has to do with the production of force, but targets a specific kind of strength. Knowing what specific type of strength gain and physiological adaption you want to make helps you determine the variables that matter the most*:

- What movement you want to train
- At what percentage of the 1RM you want to train (if you're training with an external load)
- How many repetitions and sets you need to perform
- At what speed you'll train
- The duration of the rest periods

Concentric Strength Training ("The" Strength Training)

The general term strength training emphasizes increasing the basic ability to generate acceleration and force through the shortening of muscles (otherwise known as concentric contraction) to overcome resistance (generated by the pull of gravity over your own weight or an external load you're are manipulating).

Beginners can tremendously benefit in strength gains by lifting weights starting at about 40% of the 1RM (or even a little below that) with a number of sets typically ranging from three to eight and a number of reps typically ranging from four to eight (a good sets-to-reps ratio is 5x5). Let's say you could lift (regardless of the particular lifting movement) a maximum load of 50 pounds. As a beginner, you could start straining strength with loads as light as 25 pounds. As you progress (and so does your 1RM), thanks to a number of physiological and neural adaptations that "wire" you for producing greater strength and handling greater loads, you can start increasing the intensity of the load and doing reps at a higher percentage of your 1RM—all the way up to 90 percent. (Lifting at 100 percent of the 1RM is reserved for those times when you're attempting a new, heavier 1RM.)

Other routes to progress involve increasing volume to a limited extent, by lifting the same loads for more reps and sets. You may also increase volume in term of frequency by lifting the same load and volume more frequently, which contributes to strength gains and contributes to improving how fast you recover.

The typical and ideal duration of rest periods between sets is 3 to 5 minutes. This has to do with the time physiologically required to replenish your energy stores. If you take breaks shorter than 3 minutes, you'll make fewer gains. The shorter your breaks are, the fewer gains you make.

While a number of manipulative movements can be used to develop greater levels of concentric strength, there are three fundamental lifts that should be the core of your Natural Movement concentric strength training because they strengthen very large muscle groups and benefit a number of Natural Movement skills:

- The Deadlift
- The Squat
- The Split Squat

The Deadlift is pretty much a loaded Hip Hinge. The Squat and Split Squat are loaded squatting movements up and down, respectively, in a Square or Split Standing Stance.

Power Training

Muscular power is the ability to apply strength to produce force explosively—that is, in a very short amount of time, with each repetition being performed as quickly as possible, which (at equal amount of weight) increases the intensity. Whereas power is conventionally seen as the result of concentric contraction, high velocity deceleration (such as landing on your feet after jumping from a high surface) is a form of eccentric muscular power. Similarly, the ability to rebound (to a

jump after landing, for instance) very explosively can be seen a "plyometric power."

The practical outcome of employing power is to produce force rapidly, but there's a tradeoff: Regardless of maximal effort, the maximal force that can be produced will be lower than when strength is applied at a slow or medium pace. In that sense, power training mostly contributes to training your central nervous system to produce force at high velocity rather than increasing your strength. To train power, the 1RM percentage should be around 50 to 70 percent, with the number of sets typically ranging from three to five and a number of reps typically ranging from one to five. However, the percentage of the 1RM could be as low as 30 percent with as many as six to eight reps as long as each repetition is performed with the highest velocity possible. Ultimately, power development depends on managing the greatest acceleration you can produce per repetition under loaded resistance. Because the movements are explosive with few repetitions and sets, fatigue is limited or delayed as much as possible, and rest periods may last less time than the usual concentric strength rest periods do.

Power is best developed through explosive lifts such as the Squat or Split Squat but also the Clean (and its variations) and the Jerk. But power development isn't limited to only those lifts because there are other movements that rely on power to be performed (such as the Power-Up climbing movement) but also because aspects of power are also trained with high-velocity eccentrics or plyometrics.

Power-endurance training is similar to power training with the particular aim of developing the ability to sustain explosive muscular contractions against resistance over a relatively extended period of time (which is nowhere near as long as the durations and volumes that can be sustained with strength-endurance training, which is described later in this chapter). Since you were already performing each repetition as explosively as possible, this can only be achieved either by augmenting the volume (sets and reps), by shortening rest periods, or both. Similarly to strength-endurance training, power-endurance training relates to the efficiency of your energy systems.

Eccentric Strength Training

Eccentric contraction is necessary to decelerate, and deceleration is extremely important in Natural Movement, such as when you swiftly change direction as you run, land after a jump, lower yourself from the top of a surface to a hang, or lower a heavy load. Interestingly, because of the contractile mechanism of muscle physiology, muscles are actually the strongest when contracting eccentrically.

When you're sore after physical activity, your movements probably involved eccentric efforts you were not physiologically prepared for, which paradoxically might happen mostly during the eccentric phase of each repetition you do as you aim to increase concentric strength. Eccentric contraction is always involved in concentric strength training (because you need to stretch muscles back to normal length after a concentric contraction that shortens them). Although the eccentric contraction isn't the emphasis, it is one way to ensure eccentric strength training.

To start emphasizing eccentric strength, you can slow down the eccentric phase of any movement to prolong the duration. Another way would be to "accelerate" the beginning of the lowering phase to increase the intensity of the deceleration as you approach the middle of the deceleration phase. For instance, as you lower yourself to the Double-Hand Hang after a Pull-Up, you could start lowering yourself fast so that the deceleration effort is eventually greater. Finally, downward jumps are very potent at training lower-body eccentric strength because of the high velocity at which deceleration takes place. One way to effectively and safely train landing following a downward jump is to load yourself with weight to increase intensity rather than only increasing the height from which you jump.

Plyometric Power Training

Plyometric power is necessary to quickly transition to the next movement by rebounding, and rebounding is an extremely important aspect of moving naturally and adaptively in complex environments. To rebound, you first need to decelerate, but instead of holding a position, you instantly accelerate again. This transition is so fast that it looks as if your muscles must stretch to decelerate and shorten to accelerate at the exact same time. In fact, they first lengthen then shorten, and an extremely fast transition occurs. In that sense, plyometric strength isn't really a different type of strength; it's the ability to transition from ec

centric to concentric contraction almost "instantly." Because force must be applied in such a brief amount of time, it's more appropriate in my opinion to talk about plyometric "power" rather than strength.

To ensure a fast transition, you first must have great eccentric strength, with greater velocity of eccentric contraction boosting the concentric force that immediately follows. In short, all plyometric strength training must be as explosive as possible. You can start training this ability by performing any movement with "elasticity," for instance by doing press-ups and rebounding by pressing immediately up as fast as you can as soon as you reach the lowest position; the same can be done with pull-ups and many other movements that typically involve downward-upward motion. Rebounding when jumping is the most potent and useful way to train lower-body plyometric strength (read more about the rebound in Chapter 29, "Airborne Movement."

Static Training

Whenever we hold a position where gravity or an external load (or a combination of both) must be met with a strong resistance to temporarily avoid a change of position, isometric contraction (with no change in muscle length) is involved. In short, to create the greater intensity in isometric contraction, you must avoid joint centration (vertical alignment of your joints with your base of support) typically by assuming positions with a sharp angle at the joints of the supporting limbs, which induces a greater body-weight resistance. You can increase the intensity of that resistance when you add an external load. For instance, holding a Half Squat creates isometric contraction, which is increased if you're carrying a heavy load at the same time. Holding a High Double-Hand Hang at the end of a Pull-Up and resisting gravity from pulling us down creates isometric contraction, which is intensified if you are wearing a weight vest.

Emphasizing the development of isometric strength, which is known as static strength training, matters because of the practical reasons why you may need it. Like any other physiological adaptations, it's best to specifically train isometric strength; indeed, concentric or eccentric strength do not transfer so well to static strength (whereas gains in isometric strength support greater levels in overall strength or force production). Training static strength will support "preloading," which happens whenever you need to ensure some level of static pretension before an explosive movement.

You can start training static strength simply by holding any position for as long as you can, which uses "body-weight resistance"—for instance holding a Half Squat or a Foot-Hand Crawl position with flexed arms. To make such positions harder to hold (beyond holding them for longer duration), you can use additional resistance by carrying extra weight (wearing a weight vest or holding a load). Depending on the position you use, the level of resistance involved, or the duration of the hold, you might experience shaking as your muscles struggle to maintain the same length rather than shortening or lengthening and a sensation of muscular burn.

Strength-Endurance Training

Strength-endurance training aims at delaying muscle fatigue so you can sustain repetitive and prolonged muscular effort of low to medium intensity. Thanks to strength-endurance training, you become more efficient at clearing lactic acid, which makes you fatigue-resistant.

Typically, this form of training involves light to moderate loads (around 15 to 20% of your 1RM) and a high number of reps (fifteen to sixty) per set. Strength-endurance training doesn't aim at actually increasing strength; the goal is to optimize your energy systems, particularly your aerobic metabolism or your body's ability to burn both carbs and fats in the presence of oxygen. For that reason, progressions in strength endurance training primarily involve a gradual increase in the number of sets and reps or an increase in speed of execution; progression in weight is less critical (unless sets start to feel too easy). Each repetition should feel relatively easy from a strength perspective; the difficulty of the effort stems from the build-up of lactic acid in your muscles, which causes a sensation of muscular "burn." Since the goal is metabolic conditioning rather than strength, the most effective rest periods should be relatively short (as little as 45 seconds), and there should be no more than two minutes between sets.

Failure, Soreness, and Fatigue

Failure is the inability to complete a repetition, and it happens because you have set a level of volume or intensity greater than your capability, which is not the most effective method for triggering the positive physiological adaptation you're looking for. Failure could also have to do with a level of intensity of load above what you can efficiently handle, usually when you're performing a complex technique such as a Clean. Failure from a MovNat perspective isn't limited to an ineffective or "failed" rep (a rep interrupted before the movement is completed); failure also involves effective repetitions with very low efficiency. Although the latter is acceptable when you're learning a movement, it is to be avoided when under high-intensity loaded resistance. If you normally can perform with efficiency but become very inefficient under load, the load is either too heavy, you are fatigued, or both. (However, remember that the ability to maintain efficient technique under fatigue is not only trainable, it's ultimately necessary to train it when you reach, or if you want to reach, advanced levels of capability.)

Soreness, formally known as delayed onset muscle soreness (DOMS), is an inflammatory response to muscular work that involves producing deceleration (eccentric effort) and is performed at a level of intensity to which you are not physiologically adapted. Soreness in itself doesn't make you stronger; it's merely a byproduct of muscular efforts that make you stronger. Whereas experiencing some mild soreness is a natural side effect of having done a physical activity that was productive and challenging enough to generate a physiological adaptation, crippling soreness that prevents you from moving normally indicates only that you have trained at a level of intensity you were absolutely not physically ready for. Soreness and fatigue usually go hand in hand to work against you. Indeed, movement, especially complex technique under intensity of load, while fatigued, or both, fails far more often than technique performed at a sustainable intensity or while physically fresh. If you're getting fatigued to the point of not being able to repeat the movement and your strength fails you, you're getting too close to your limits, with the two usual problems: the risk of injury gets higher and you start to ingrain inefficient patterns.

You want to work at a level that enables you to maintain technical efficiency as long as possible and so you remain "operational" to keep training other aspects of Natural Movement and respond to any real-life situation at any time without being overly fatigued. However, as I said earlier, specific training emphases that mix efficiency and capacity can be designed to increase resistance to technical breakdown due to fatigue.

Periodization

To overcompensate as a result of overloading, your muscles need enough time to recover. Recovery speed varies between individuals, but it's usually two to five days. As you allow specific muscles involved in a strength training session to recover, you may transition to using another movement in between to keep training your strength, alternating the muscle groups that are involved at each session (which is known as split training).

Since Natural Movement practice is so varied and versatile, you may not have the luxury of waiting several days without involving the particular muscle group you used during your last strength training session until they are recovered enough. Instead, you may keep employing those particular muscle groups through the ongoing practice of other Natural Movement skills, but you use them in a different way. Those muscles organically participate in active recovery, which is the process of recovering physiologically while remaining physically active. For instance, you may run the next day (or relatively soon after) after doing heavy lifts (Deadlift, Squat, or Split Squat) or practice Power Jumps or other types of jumps and landing with different intensity and volume, depending on the body's feedback. You may be soliciting the same muscles every day or so, but you're doing so in a way that demands different muscular contraction efforts either through the same movement patterns or through different movement skills and that overloads them differently with different reps and sets.

Depending on your ability to recover and on how you alternate movement types while modulating volume, intensity, and frequency, such a synergistic approach could stimulate overall adaptations rather than being physiologically conflicting and counterproductive. This approach works as long as you ensure a sufficiently consistent pattern, which means

regularly and frequently training the same kind of movement with the same kind of stress with gradual overloading. Given the high number of variables involved, observation and experimentation eventually gives you the experience you need to approach periodization in a way that works best for you. Also, the advantage of never experiencing monotony because of the variation is not insignificant.

Testing Strength

Verifying whether you have increased strength in a particular movement is natural and exciting, but it's also necessary. This verification requires a standard way to execute a given movement and consistent variables that you can test. For instance, both the Squat and the Split Squat involve your lower body, but you can't test one and assume your maximal strength in the other will be the same. Similarly, holding different objects in different ways or standing on different terrains might bear different results. On top of testing your 1RM, you could also test the maximal number of repetitions you can perform at a given percentage of your 1RM, for instance at 80 percent of 1RM. Similarly, you could test how many repetitions of a given movement you can do—such as how many Pull-Ups you can do.

It's also essential that you not attempt personal records (PR) too frequently. You need to trust that the process of continuity and progressive overload is making you progress without checking for such gains all the time. Once monthly is an average frequency.

Conditioning

The aim of conditioning, wish is also called energy system development, is to enable you to move longer, faster, or both by improving the aspect of your physiology that handles the sustained production of energy when your effort goes up in speed, intensity, or duration regardless of the type of skills involved.

Before we look at how we use energy, let's look at where energy comes from. The body needs food as a source of energy to ensure both essential physiological functions and physical activity, but it must first convert the nutrients it gets from food into energy that readily available to the cells. Digestion breaks down carbohydrates, fats, and proteins into three essential compounds, respectively glucose, fatty acids, and amino acids. The body then stores the glucose in our muscles in the form of "glycogen" as well as fat and transforms any of those three energy sources into a single form of fuel called Adenosine Triphosphate (ATP), used in three different energy systems to ensure a reliable supply of energy depending on the type of effort produced. Regardless of what we do, ATP is the necessary energy we need to fuel our activities, whether the activity is all the diverse fundamental biochemical processes that keep us alive (breathing, digesting, regulating body temperature repairing cells, and so on) or some movement activity. Absolutely any activity, including blinking an eye or thinking, demands ATP. Let's have a quick and simple look at those three energy systems:

- Aerobic energy system: The aerobic system is our primary energy system. It handles our fundamental metabolic functions and all low-intensity tasks, which constitute the majority of our day-to-day physical activities. The aerobic system is the only one of the three energy systems that uses oxygen, so it relies heavily on the circulatory system to transport oxygen to our cells where energy can be burned. Continuous movement that can be sustained over long durations (several hours), such as hiking, is good conditioning for this system. Any Natural Movement skill can be practiced at low intensity, so the type of movement performed isn't what really matters; instead the level of intensity has to remain low enough that the effort doesn't cause noticeable or unpleasant sensations in the body, such as shortness of breath or muscular burn. In that regard, doing something as simple as increasing the speed at which you hike has been proven to benefit your conditioning.

- Anaerobic energy system: The anaerobic system utilizes glycogen, which is the storage form of glucose in the muscles, to produce energy for medium- to high-intensity physical efforts that don't last more than two minutes. The harder and faster your muscles work, the greater the intensity of the effort and the greater the need for oxygen, which results in a temporary deficiency or even shortage of oxygen and causes shortness of breath, a dramatic increase of heart rate, metabolic waste (lactic acid) building up in your muscles (which is what causes the unpleasant sensation of muscular burn), and an overall sensation of fatigue.
- Anaerobic alactic energy system: The anaerobic alactic (ALA) system is the energy system used for instant bursts of high-intensity effort that lasts less than ten seconds. The most explosive movements all rely on this energy system.

High-Intensity Training

The metabolic efficiency of all three systems can be improved through physiological adaptations generated through progressive overload and overcompensation. Whereas we are all able to sustain low-intensity physical activities to some extent, developing the ability to sustain high-intensity work demands specifically training.

The good news is that when you regularly train high-intensity efforts, you improve your ability to sustain prolonged low-intensity activity as well. You can train for high-intensity through either straight high-intensity training (HIT) or through high-intensity interval training (HIIT), which is just another form of high-intensity training.

High-intensity training raises your heart rate in seconds and keeps it high during the whole protocol as long as you push to maintain the high intensity. Your metabolism also is raised during the training, and it stays high many hours later, which helps your body burn fat for hours.

HIT and HIIT both embody the meaning of work out because you indeed must work yourself "out" during the training regardless of the particular protocol used, which enables you to reach or get really close to VO2 max, which is highest amount of oxygen your body can consume during effort. When you go all-out at high intensity (always after a few minutes of movement preparation), your muscles need more energy more quickly, which results in needing more oxygen more quickly to burn more energy at a faster rate. It becomes rapidly physiologically challenging for your body to supply your muscles with oxygen that fast. Your body has to switch from the aerobic system to the anaerobic system to enable your muscles to keep burning calories when the oxygen supply becomes deficient. However, this creates a large oxygen debt, and ultimately you need to resupply your body with oxygen to return your metabolism to its normal state. This is the main reason why you keep breathing hard even after you have stopped your effort completely.

When you exercise very intensely, lactate (or lactic acid) is generated as you burn glucose, and it builds up in your muscles, which is where the feeling of burn in your muscles comes from. So high-intensity training makes you breath really hard, feel your heart racing, experience an intense burn in your muscles, and sweat a lot to help your body cool off. You don't really need a heart-rate monitor to know that you are in the "red zone" of high intensity; you can just feel it—and it isn't particularly pleasant. Yet, by increasing metabolic intensity, you can produce greater metabolic conditioning improvements in a shorter time compared to longer but lower-intensity cardiovascular exercise. For instance, a four-minute high-intensity bout can burn as many calories as a sixty-minute jog, and a three-times weekly session of thirty minutes of anaerobic HIIT training produces results similar to a five-times weekly session of sixty minutes of aerobic/low-intensity aerobic "cardio" training. In short, conventional "cardio" training is not the most effective approach to improving your energy systems, even though some baseline low-intensity endurance training remains necessary to develop an optimum ability* to sustain specific effort. When you compare high-intensity training to other options, it's a no-brainer that it's the "best bang for your buck," with the only trade-offs being that it' mentally more demanding and temporarily more taxing on your body.

HIT (or HIIT) has several significant benefits beyond an improved ability to sustain bouts of intense, anaerobic physical work:

- Improved endurance in aerobic effort, which is the ability to sustain low- to medium-intensity efforts over a prolonged period of time.
- Improved recovery (improved ability to remove waste products of exercise, such as lactic acid or to convert it into energy).
- Improved metabolic flexibility, which is your ability to use either of the two main energy sources stored by the body (glycogen of fat), with equal efficiency regardless of availability.
- Improved body composition as your body keeps burning fat twenty-four hours after the workout (known as the "afterburner effect"). Although it's impossible to decide what areas of your body will lose fat, you are guaranteed to become and stay leaner overall. HIIT also boosts the production of human growth hormone (HGH), which supports better body composition and better tissue repair.
- Improved insulin health, heart health, and hormonal balance, reduced inflammation, and lower blood pressure.
- In men, improved levels of testosterone (a hormone essential to healthy body functions in males).
- Improved mental fortitude: HIIT demands the willpower to push yourself to the "red zone" and to maintain yourself through the significant—yet temporary—discomfort that ensues.

HIT

High-intensity training (HIT) implies that you will increase the intensity of your movement(s) primarily by going as fast as you can, while also potentially increasing other aspects of intensity (distance, height, depth, range of motion, weight, force of impact). For example, you might determine a certain amount of work (distance covered, number of repetitions) to be performed in the shortest time possible. Another possibility is to determine a certain amount of time—ideally a minimum of four minutes and a maximum of thirty minutes—in which you do your best to perform the greatest amount of work possible, for instance by completing the greatest number of rounds you can of a predetermined combo. Regardless of which approach you choose or of what types of movements are involved, you can't take breaks when you've started, and ideally you don't want to slow down. Clearly, how much work you can produce in relation to the time given is the practical goal to achieved, whereas high-intensity effort is the necessary means and outcome of pursuing that goal. By determining and committing to such objectives, you can find the motivation required to achieve such a challenging effort.

Example of an advanced high-intensity combo: (20x Deadlift (BW)/200-yard sprint/4x Back Sprawl to High-Hand Reach upward Power Jump Power-Up to Pop-Vault to Downward Jump) x5 for time (in the shortest amount of time).

HIIT

High-intensity interval training (HIIT) is based on intense bouts of work followed by short rest periods that's repeated a number of times. Sessions usually last between four and thirty minutes.

There are specific formulas to HIIT but no standard ones. The most simple, effective, and adaptable way to start approaching HIIT regardless of your fitness level is to use the concept of fartlek, which means speed play in Swedish. In a fartlek session, you spontaneously mix high-intensity periods with low- or medium-intensity periods and allow your sensations to be your guide rather than following a detailed and predesigned regimen. Because fartlek enables you to auto-regulate, it's the best entry point for beginners who aren't ready for more regimented and demanding high-intensity interval protocols. This format was originally used for running, but the same concept can be applied to any practice session regardless of the movements used. For instance, low-intensity movements such as walking, balancing, hanging, and getting up and down can be done in between intermittent bouts of fast running, fast lifting, fast jumping, or any high-intensity movement and effort. This concept was known to Georges Hébert (a historical figure

*Specifically, the single aspect that endurance training develops and that HIT doesn't is Qmax, which is the volume of blood your heart sends to your muscles.

in physical education) as the principle "alternation of contrary efforts," which literally meant interval training involving alternating diverse intensities of effort.

The most famous HIIT protocol is Tabata, which is also called 20/10 protocol. Tabata is named after the Japanese physician who created it. The principle is simple: twenty seconds of all-out, maximal effort followed by ten seconds of rest, repeated eight times (for a total of four minutes). Since the duration of each bout of high-intensity period as well as the duration of the rest time is always the same, you can't rest more than you would like and you are forced to sustain high-intensity without slowing down. By taking rest periods of only half the duration of the maximal effort intervals, your physiology doesn't have the time to fully recover before it resumes high-intensity effort again. However, the rest is long enough to make it possible to sustain high-intensity effort over a longer period of time than if you were to go all out without any rest at all. In any case, as long as you commit to reaching the greatest intensity you can during each high-intensity bout, after a few rounds you will become absolutely out of breath, and your body will feel like it's entirely on fire.

NOTE

You could make a 20/10 protocol longer than four minutes. You could instead do multiples of four minutes (eight, twelve, sixteen, and so on) up to about a half hour.

Example of natural environment fartlek-style HIIT: Sprint 50 yards uphill, slow Foot-Hand crawl over 25 yards, jump up and down a 4-foot rock a few times, run fast back to the edge of the hill and Inverted Foot-Hand Crawl down the hill as fast as you can, balance on a fallen tree and perform four Pivot Reverses quickly, jump to Pull-Up on a tree branch then immediately jump down to Back Sprawl and jump back up to Pull-Up ten times, resume sprinting on flat terrain over 100 yards, and so on

For a Natural Movement HIIT following a Tabata protocol, you need to determine exactly what movements are to be done at what intensity (weight, height, depth, distance) before you begin. You also need a timer or someone to tell you when to start and stop the bouts of high-intensity activity and rest. Instead of complete rest, you could do low-intensity moves or hold positions—for instance, you could balance or crawl slowly in between high-intensity intervals instead of completely resting.

Assessing Intensity Level

A simple way to look at the metabolic/cardiovascular intensity at which you train (apart from heart rate) is to look at your breathing pattern in terms of the type, amplitude, and speed:

- Low intensity: Slow abdominal breathing.
- Mild intensity: Slightly faster–paced abdominal breathing + breathing through the nose.
- Medium intensity: Medium-paced abdominal breathing + low-amplitude chest breathing when inhaling (exclusively following abdominal inhales). Breathing through the nose is still possible.
- High intensity: Fast-paced abdominal and chest breathing, through the open mouth, heart racing, burning sensation in the lungs, and a strong desire to slow down.
- Very high intensity: Highly fast-paced chest breathing with an open mouth, intense burning sensation in the lungs, potential strong cough, and a feeling that something is physically wrong and that return to normal is impossible.

HOW TO APPROACH HIT OR HIIT FROM A MOVNAT PERSPECTIVE

Because HIT and HIIT are physiologically very taxing, this kind of training might not be a good fit you if you are a beginner or if your health levels aren't too good because it may significantly increase the risk of injury and be hormonally disruptive. It also might not be a good choice if your movements are still sloppy and not fit to be used for a large number of repetitions. If you are out of shape but healthy, you may simply increase the intensity of your movement to a level that you feel remains sustainable if you're doing straight HIT, or use the fartlek method if you are doing HIIT. This is especially valid if you also having conditions such as diabetes, high blood pressure, or arthritis; you may simply increase intensity very conservatively and for very brief periods of time. Make sure to always listen to your body sensations. Alternatively, beginners could use a Tabata protocol that involves alternating low-intensity rest periods with medium-intensity intervals instead of high-intensity ones.

Only use movements that are simple enough or that you have mastered enough to sustain greater levels of intensity without the movements deteriorating quickly or dramatically. The goal is not to improve technique but to improve your energy systems without degrading your technique, which can be challenging. With HIT or HIIT, either the technical difficulty of the movements used must be limited, or the efficiency of the movement patterns used can be sustained at such high levels of intensity. Highly technical movements should not be done for time because when fatigue kicks in, movement quality will rapidly start to deteriorate. Similarly, you must avoid overly complex environmental variables.

Limit frequency to at most three times a week, depending on parameters such as your health levels, how fast you're able to recover, your age, or your personal objectives. It's not just the intensity of a given HIT session that can be damaging to your health if you aren't ready for it; too much frequency in training at high-intensity despite existing soreness or accumulated fatigue (including adrenal fatigue) can result in injuries. If you try to "hammer" every session to turn it into a high-intensity workout you aren't giving your physiology the time it needs to adapt to such levels of stress, which causes effects adverse to those you're seeking. Maintain the majority of your practice session in the low- to medium-intensity range instead, with occasional bursts of high-intensity effort.

Because of the reasons listed here, most people who are not advanced, healthy practitioners should avoid competition because it's guaranteed to make you accept dramatic degradation of movement quality for the sake of speed, do more than you should actually do, and potentially alter your health, dismiss pain or body signals that can be forerunners of imminent injury, or all of the above. Instead of competing with others, you simply want to genuinely push yourself to the greatest extent you can or to the extent you feel remains sustainable for you in term of health.

26

Natural Movement Benchmarks

Without a doubt, developing real-world physical capability is ambitious and challenging in many respects. Regardless of what method you want to use to reach your objectives, you might want to aim at something more specific than a general idea of overall, continuous improvement. You might want to have benchmarks. I believe that benchmarks can be very useful at giving you a sense of where you currently are while also providing an element of motivation as you keep making progress toward a goal. As you become more experienced, you should aim at improving your performance from one benchmark test to another; but if you are a complete beginner, a benchmark can help you have a sense of your fundamental level of capability so you can set a goal for the performance you want to achieve.

Before you begin the example benchmark tests in this chapter, consider whether you are realistically capable enough to undertake such challenges in a safe manner. If you the answer is "no," or if you feel that something is going to really push your limits, you should abstain from taking the test. (This also indicates you're really in need of Natural Movement practice.)

When you're ready to try the benchmark tests, make sure to do a warm-up that's specific to each test—for instance, jump shorter distances before you attempt the jump test. When you are ready to do the test, you have only one attempt. Imagine that you're in a real-world situation, and you have no time to warm up. In a real-world situation, you also don't have the leisure of being able to miss and try again; you would just have to deal with the potentially negative consequences of a failed movement. For your test, try to get in the same mindset you would have as you approached a challenging, real-world situation. Use the same realistic, committed approach to the tests.

SAFETY NOTE

I provide specific safety tips for each test whenever necessary, but you should remember that in the real world you would not have the luxury of doing these movements in an ideally safe environment.

Ground Movement

The two following tests can be done on any firm surface, but you must do them either barefoot or in neutral-sole footwear (no positive heel). The reason is that an elevated heel compensates for potential mobility limitations and makes the movement easier to do. For the same reason you must make sure that the surface where you do the movement is actually flat to prevent any artificial elevation of your heels (relative to the forefoot).

1. Hold a deep squat 30 minutes in a row without interruption. Imagine that you're tending to a fire, cooking, fixing weapons, manufacturing something with traditional tools, or just waiting. You may shift weight from one foot to the other and occasionally step slightly to one side, but don't stand or let your heels come off the ground for more than 2 seconds.
2. Start in a seated position on your rear end and get up without using your hands. Then return to a seated position on your rear end without losing your balance. Find three different ways to achieve it. Again, do not use your hands. Imagine having to quickly get up while holding an infant in your lap or after aiming and shooting a bow and arrow at a target.

Gait

The three following tests must ideally be performed on uneven terrains—which includes bumps, holes, rocks, uphill slopes, downhill slopes, and various easy obstacles. Ideally you should be wearing a minimal type of footwear except when you sprint. (Footwear is important for sprinting because there is a real risk of stumbling and falling hard.) Run on a natural surface that is clear of obstacles.

1. Walk 10 miles nonstop at a relatively steady pace. Imagine you're going back home after you got lost and that you cannot wait to arrive, have a drink, eat, and relax.
2. Sprint 200 yards in less than 30 seconds. Imagine having to escape an imminent threat such as a flash flood by running to a shelter that's 200 yards away.
3. Run 10 miles in no more than 80 minutes. Imagine having to get back to your tribe with medicinal herbs for a sick child who needs them urgently

Balancing

For this test you can use a 2x4 board on the floor, but you also can add variables such as a rounded or slightly unstable surface to make the challenge more realistic. To keep the test safe, you should do it either at ground level or on a surface that's raised no higher than 2 or 3 feet.

1. Walk across a 12-foot-long surface without pausing or stepping down once. Imagine having to walk across a raging river on a fallen tree. Falling would mean being washed downriver with the risk that you might get smashed on rocks or even drown.

Climbing

Find a solid, reliable horizontal bar that's at head level or a little higher. It should be at least 3 inches thick.

SAFETY NOTE

Before attempting the climbing test, grasp the bar and hang from both hands for 30 seconds to make sure that you have enough grip strength to attempt the climbing test safely. If you're not sure of your ability to land on your feet if needed, place a soft surface below the bar or have a friend spot you.

1 Start in a Dead Hang position, which means you're holding the bar with your hands, your body is hanging vertically, and your feet aren't touching the ground. Imagine you have jumped to grasp a tall tree branch but now have to climb to safety on top of it. Find a way to mount the top of the bar without using jumping momentum or pushing off a side surface with a leg. The climbing strategies you use may involve pure power or rely mostly on technique.

Lifting *and* Carrying

You may choose between the two following tests:

1 Find an object that is half your body weight and has an irregular shape or weight distribution or is without handle(s). Lift the object from the ground and carry it a distance of 1 mile on uneven terrain without putting it down. Imagine that you're bringing food back to camp.

2 Find a person who is about your own weight. Carry that person over half a mile of uneven terrain without pausing. (You may carry the person in any type of position that works best for you.) Imagine that a tribe or family member is hurt and unable to walk, so you must carry that person back to camp.

Jumping

You should be able to jump from a standing position to a distance that's at least equal to your own height. (You may not use stepping momentum or a running start.)

1 First perform this test at ground level, using simple markers to determine length. If you can achieve this distance comfortably enough, the next step is to jump the same distance between two slightly raised surfaces and to "stick" the landing, which means recovering your balance upon landing without stepping off the surface; you should be able to stand still for a few seconds after landing.

SAFETY NOTE

The surfaces should be raised no more than 1 inch, be flat, be stable, and not be slippery. The landing surface, for instance a piece of wooden board, should be placed on top of a non-slippery surface, or placed against something heavy, to avoid a situation in which you would potentially slide forward upon landing.

Throwing *and* Catching

Find simple props, such as a softball or tennis ball, for throwing and catching. Use a plastic jug or bucket as your target.

1 Throwing test: Use a simple prop, such as a stone or a softball, and aim at a surface the size of a 5-gallon jug that's 15 yards away. You want to hit the target with enough force that the projectile rebounds some distance (it doesn't just drop down where it hit).

2 Catching test: Have a partner throw a softball or light object from a 20-yard distance along a relatively rounded trajectory five times in a row, using about the same force each time. However, the direction of the throw may change slightly each time, forcing you to be alert and responsive and make steps to position yourself in a way that ensures an effective catch. Catch the object with both hands. You fail the test if you drop the object before you've made five consecutive successful catches.

Evaluating *the* Results

If you managed to perform all the tests effectively, you're off to a good start. Effectively means that you were successful at completing the test even if you weren't necessarily efficient at it. For example, when balancing, did you notice any (or all) of the following "symptoms"?

- You were wobbly or stiff.
- You used your arms for counterbalancing.
- You held your breath.
- You bent over to look down at your feet the whole time.

Those symptoms are a sign of inefficient movement. The more inefficient your movement is, the more likely you are to fail, which can have consequences. Conversely, the more efficient you are, the better your performance, energy-conservation, and safety.

"No matter how many goals you have achieved, you must set your sights on a higher one."

—Jessica Savitch

Remember: These benchmarks are not the be-all and end-all of Natural Movement performance. They merely suggest a baseline of real-world capability you want to aim for; they're examples of some aspects of capability I hope you will consider acquiring through consistent practice. To some degree real-world capability is individual, depending on diverse personal factors. However, we also should consider capability to be something that's real, objective, and not subject to personal interpretation. We should all have a minimum level of ability that makes us capable of taking care of ourselves and those we care about, just as firefighters have to demonstrate a certain level of capability to be qualified to be a contributing member of the team.

This reality should motivate you to reach a certain level of performance and be able to maintain it for as long as possible. Remember the practical and vital principles of the Natural Movement manifesto.

Regardless of how you performed these tests, whatever your current level is, you have to keep practicing so you can improve. It is a process, a lifetime endeavor. Breaking the physical inertia of the modern lifestyle and committing to making consistent—although not necessarily big or quick—progress is what really matters in the end.

All the remaining material in this e-book was originally included in part 4 of the *The Practice of Natural Movement* book, in the section on "Techniques" (i.e. from pages 193 to the end of the book).

Removed from Chapter 24, Ground Movement 1: Lying, Rolling, Crawling (i.e. from pages 194 to 267 in *The Practice of Natural Movement* book).

Lying Rolls

As practice, rolling is a fun movement to do. However, the apparent simplicity of rolling movements is deceptive. For most adults, these positions and movtement patterns feel very awkward at first. That's because there's a big difference between rolling randomly (and often clumsily) on soft surfaces for fun and rolling intentionally and skillfully on firm surfaces. You might lose balance. Your sense of proprioception and spatial awareness might be tricked and confused. You might realize that you lack the spine mobility and body coordination to perform efficient rolls, or you lack the abdominal strength to roll from a lying position when you haven't generated any momentum. Working on these techniques might expose physical weaknesses you didn't know you had.

Supine Lying Side-Rocking

Supine Lying Side-Rocking precedes the complete Side Roll from a Supine Lying position to a Prone Lying position. The Supine Lying Half-Side position may help you have a better vision of what is on the side to which you're turning, can help put you in a more effective position when you're crawling through a very confined space, or make it possible for you to assume a better position so you can reach and grab something with your hand.

The practical usefulness of this drill is not restricted to the Side Roll, though. It's also beneficial to the Supine Shoulder Crawl technique I describe later in this section. From a functional standpoint, the Supine Lying Side-Rocking drill teaches you to use and control hip rotation effectively as the primary drive for the motion.

I recommend that you start learning to roll on relatively soft, forgiving surfaces so that you avoid feeling very uncomfortable and tense. I also recommend also that you start rolling from lying positions rather than standing positions. The reason is that it's easy to throw a roll using the pull of gravity, but if the roll is uncontrolled the landing may resemble a painful crash. Starting from a lying position is the best way to ensure that you first learn a controlled, slow-motion roll. Lying rolls are both self- and gravity-powered. The first phase of the roll is self-powered, and the second phase is more gravity-powered.

If you can perform a good roll in slow motion, you can perform a good dynamic roll, but the opposite isn't necessarily true. If you want to eventually learn efficient and safe rolls from standing positions, you need to learn to perform them first from lying and in slow motion with impeccable control over your positions, sequence, timing, and relaxation.

1. Start in a Supine Lying position with your arms lengthened and your hands a few inches from your body.
2. Initiate the motion from a hip rotation in the direction you want to roll. If that is too difficult, you could assist the rocking motion by lightly pushing off the foot and/or hand opposite to the direction in which you want to roll. Another option is to lift your back leg (the one that's opposite the direction in which you want to roll) and swing it in the direction you want to roll.
3. Shift your weight to the side of your body and maintain balance for a second or more. For optional balance practice, you may bring the upper leg on top of the lower leg. From there, rock back to the neutral Supine Lying position and rock to the other side.

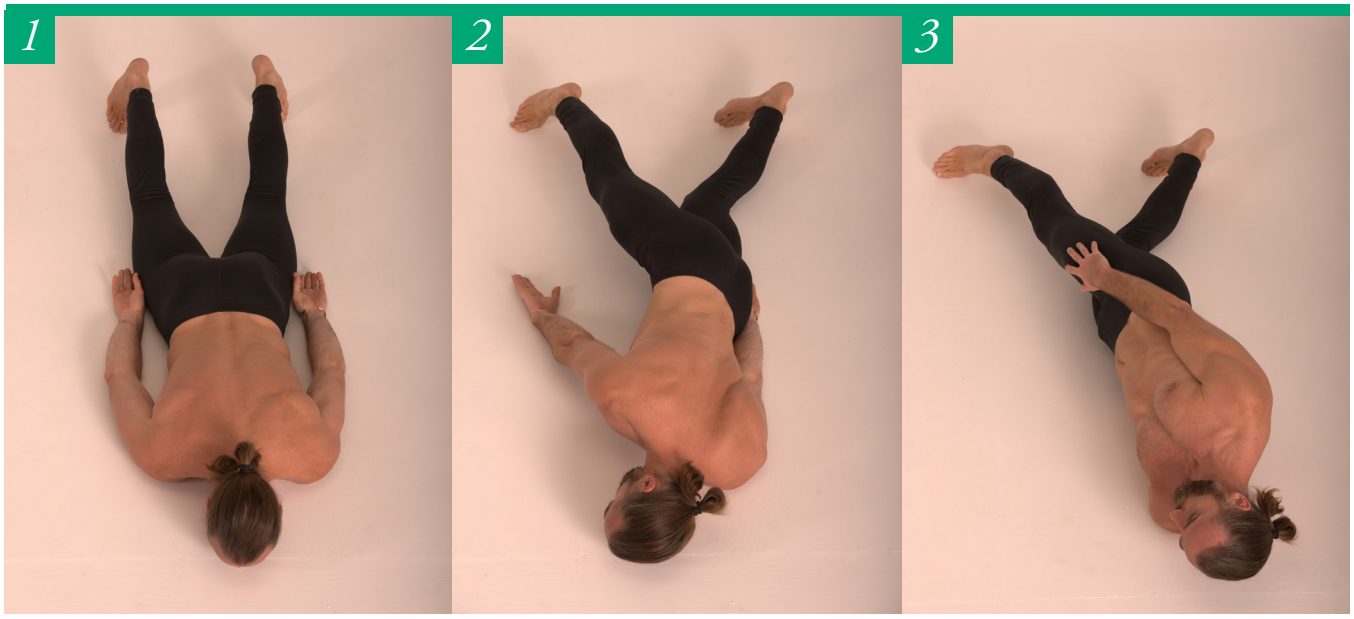
A progression to this drill that really teaches you how to use hip rotation is to keep both hands on your hips and keep your feet together as you lift them 1 inch off the ground. This position prevents you from using your foot or hand to push off. The whole motion is entirely dependent on your hip drive.

It's good to practice this same pattern with slightly different arm or leg positions, such as arms lengthened against your body, hands on your hips, arms crossed over your chest, arms lengthened overhead, legs bent with the knees toward your chest, and so on.

Prone Lying Side-Rocking

For practical reasons, you also should be able to rock to the side from a Prone Lying position.

1. Start in a Prone Lying position, arms to the side of your body. Optionally, you could tuck or cross your arms underneath your chest, cross them behind your back, or extend them overhead.
2. Drive the motion from a hip rotation to roll backward and onto your side, at an angle.
3. Fully roll sideways, bringing your top arm against the upper side of your body and maintain this stance a few seconds. You can increase the challenge to your balance by bringing both legs together.

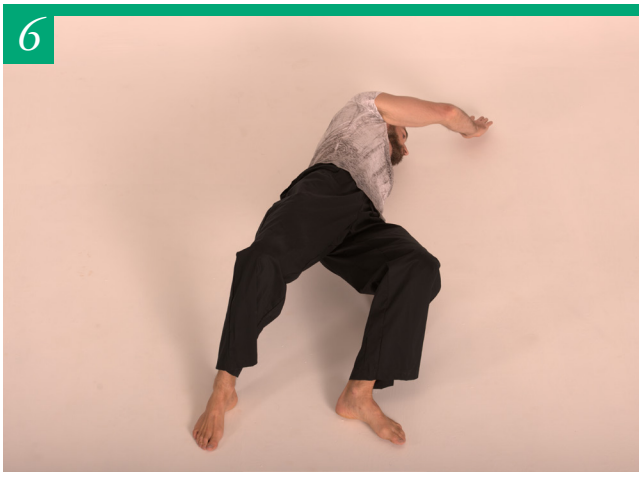


Return to the neutral Prone Lying position and rock to the other side.

Split-Leg Supine-to-Prone Lying Hip-Thrust Roll

Another option to switch from a Supine Lying to a Prone Lying position is to use a "hip-thrust" motion. The hip-thrust motion is a more explosive way to use hip rotation because you use your feet to strongly push off your legs and lift your hips and rear off the ground before you rotate your hips. Working on this pattern is a great step toward mastering the Hip-Thrust Crawl I show later.

1. From the Supine Lying position, bend the leg opposite to the direction in which you want to turn. Firmly plant your foot on the ground.
2. In one motion, push off the planted foot to lift your rear off the ground to remove friction from your bottom and dynamically rotate your hips.
3. Push until your hips have almost fully rotated and your foot is about to leave the ground. Extend your upper arm in the direction you're rolling while extending your lower arm on the other side to avoid trapping it underneath your body as you keep rolling.
4. Keep sliding your arm up after you're in the Prone Lying position.
5. Finish your Side Roll in the Prone Lying position with both your arms extended or bent in front of your body.



6. Optionally, you can push off both feet in the first step. Use this method when you're unsure of the friction you can get from a single foot.

Rotational Rocking

Rotational Rocking can be used for a quick repositioning of your body as you're in the Supine Lying position. You can use Rotational Rocking in a defensive strategy against an opponent who's standing on his feet in front of you and trying to step to the side and forward to reach the side of your body, which is vulnerable. You can avoid exposing your sides by repositioning your whole body in alignment with the aggressor every time he tries to get to your side, and you can kick his legs and knees if he tries to step forward. You can protect your face with your arms and hands.

NOTE

Like the Front-Rocking movement, Rotational Rocking requires a rounded back. Remember that optimal spinal alignment is adaptable to context.

The abdominal strength and hip control necessary for this drill are greater than what's necessary for the more basic Front-Rocking drill. You must generate controlled imbalances on the all planes of motion to ensure effective rotation. Because of the relative complexity of this movement, and despite the nearly constant, strong abdominal contraction that's involved, you must always maintain strong abdominal breathing. See the Safety Note in the Front-Rocking drill (page 000) because it's also applicable to this drill.

As a way to practice the drill, you can use two methods:

- Turn and reposition your body at an angle with a single rotational rocking motion, come back to your starting position, and then rock on the other side and return to the starting position, and so on.
- Perform a 360-degree revolution until you reach your starting position, and then do a full revolution in the opposite direction.

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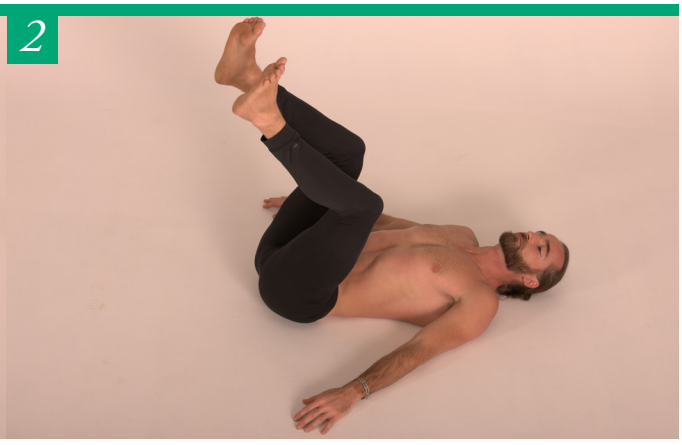
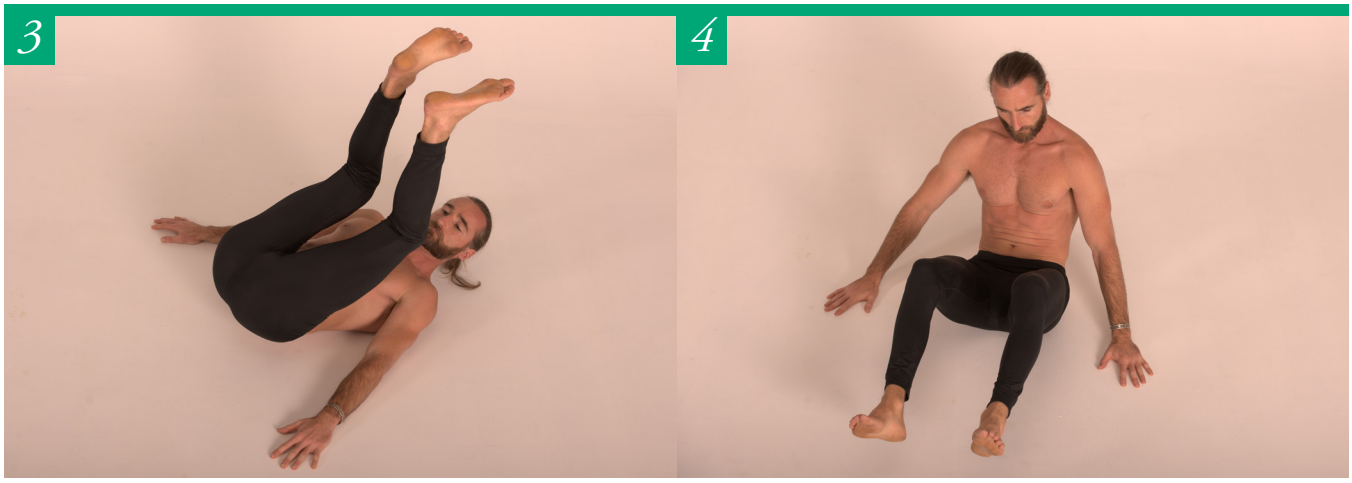
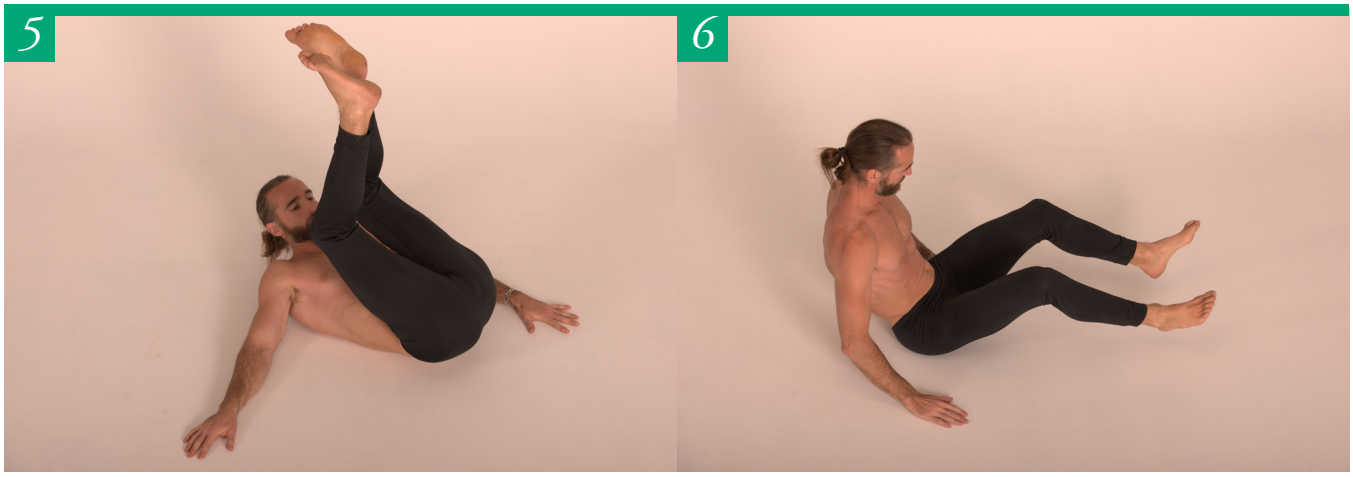




1. Start in a Supine Lying position with both legs bent. Your arms are extended on each side of your body in a V, palms down. Optionally, you can start in a bent sit, as described in step 4.
2. Pull your half-bent legs toward your chest to lift your rear off the ground as your back makes contact with the ground.
3. Push off your hands and the backs of your arms to stabilize your body and maintain a relatively compact body posture; your legs are not too far above your body. Keep lifting your rear up and simultaneously use hip rotation to orient your lower body in the direction you're turning.
4. Gravity pulls you back to a Bent Sit position, and your hands are on the ground. You're ready to resume the backward rocking motion; this time, immediately lean with your whole body to the direction in which you want to rotate, which positions your upper body at a further angle toward the desired direction.

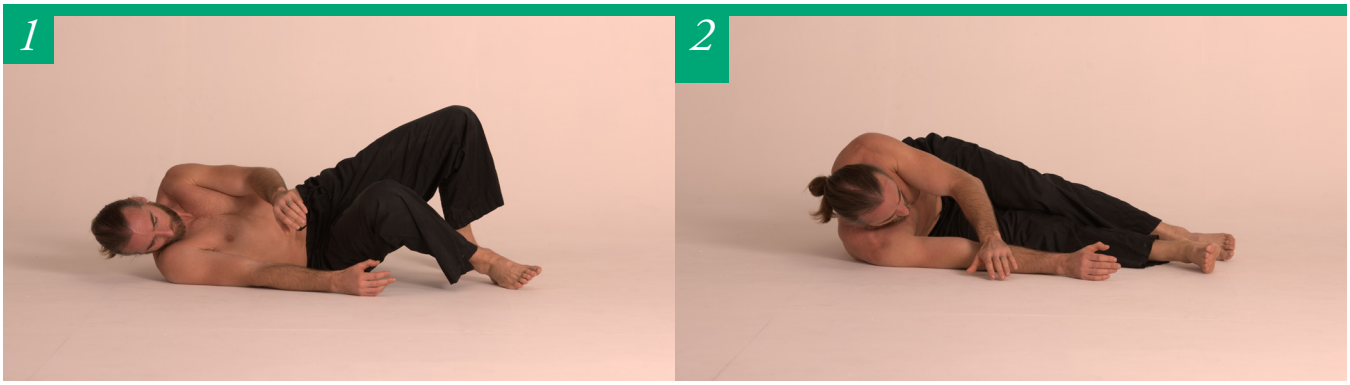


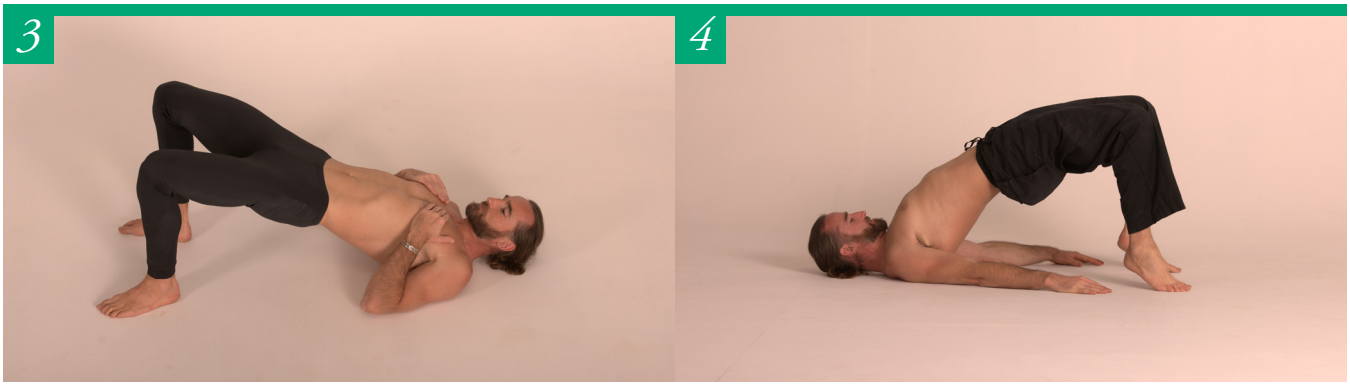
5. When your back contacts the ground, you may push off the back of your upper arm (the one that's opposite to the direction you're headed) to help the rotation. Again, lift your rear and simultaneously use hip rotation to orient your lower body in the direction you're turning.
6. Thanks to the momentum from the sit, you should be able to rotate further than you did with the first rotation, which started from a lying position.

Inefficiencies of the Hip-Thrust Crawl (i.e. from pages 206 - 207 in *The Practice of Natural Movement* book).

Following are some common inefficiencies in the Hip-Thrust Crawl:

- Not pressing the heels down, which lowers the amount of friction, especially if you're using a single leg. The friction from your heel must match the power of the leg and hip; otherwise, your foot will slide forward and reduce the power or distance generated and slow you down.
- Not pulling your foot high and close enough to your rear when you intend to move fast and cover as much distance or generate as much power as you can.
- Not elevating your rear and hip enough, which reduces the downward pressure onto the heels and the friction at the heels, which makes it easier to slide forward as you push off your leg.
- Bridging, which elevates the hips too high and arches the lumbar area; the result is a decrease in the rotational power of the hip thrust. Unless you are in a defensive context and trying to bump an opponent off, bridging is a waste of energy and will make you land heavily on your side.
- Leaning to the same side as your bent leg, which is biomechanically inefficient because it places your leg and foot in an awkward and weak position and makes it hard to push off.





1-2 The heel isn't pressed down, which allows the foot to slide forward when the leg is extended

3 Bridging is unnecessarily high. Bridging that high and powerfully can be used to bump an opponent off one's body.

4-5 Bridging with both legs or a single leg is excellent for the lower back and stiff hips.

Lying Drags

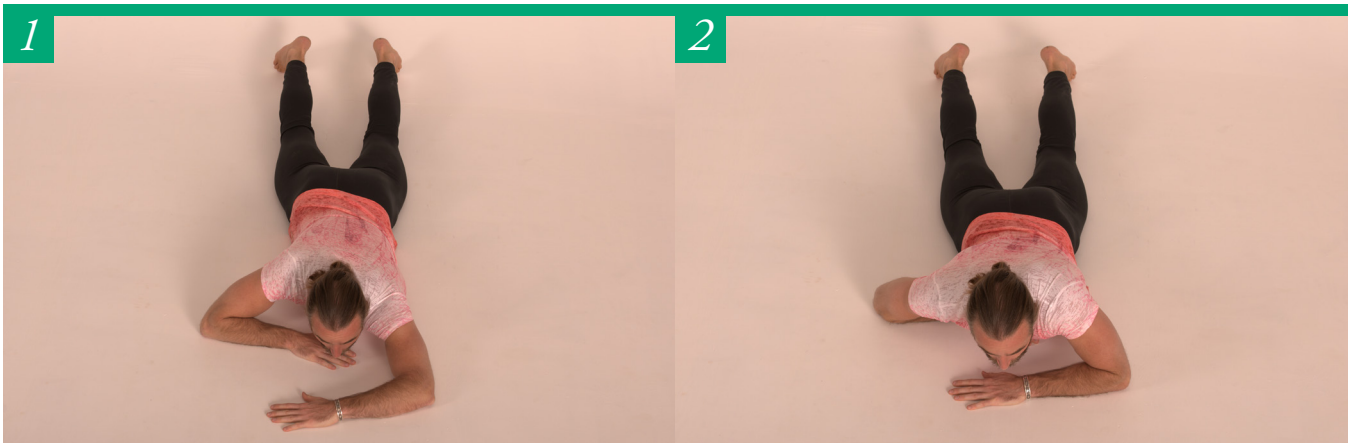
A lying drag is a form of partial lying crawl that requires you to push or pull from your arms to drag the rest of your body along the ground. Imagine you are crawling under a very low obstacle, and eventually your arms and head pass beyond the obstacle, but you can't elevate or rotate your hips to push yourself forward because there isn't enough vertical space to do so; you need to drag yourself through and out. More dramatically, imagine that you are unable to stand because both your legs are hurt, or you're under fire and can't even crawl on your knees because it puts you at too much risk; you need to drag yourself over a distance until you can get help or reach a shelter. Lying drags can be used briefly during crawling or as a repetitive crawling motion over distance.

The terrain (soft or hard, smooth or rugged, inclined or declined) determines whether this movement is slow or fast, energy-consuming or energy-efficient. It's very hard to push yourself backward in a Prone Lying position, or even in a Supine Lying position. Unless the surface and your clothing facilitate sliding, or you're going down a declined terrain, it doesn't work. Otherwise, Prone Lying dragging movements are always done in a Half-Press or Full-Press Prone Lying position, which allows you to reduce friction on the ground to enable movement. Sometimes, you can combine diverse sliding strategies to adapt to the terrain variables and find the most efficient movement or to rest the muscles you've been using while you employ different muscles. You may occasionally assist your upper body by pushing off the balls of your feet in a flexed-foot position and use a slight hip rotation from side to side to support forward momentum.

For practice, find a surface that is gentle, such as sand, grass, or a mat. (The beach is perfect.) If you're practicing on a harder surface (wood, concrete, or even rubber), make sure to wear pants and shoes. If you're barefoot on a hard surface, you may place the balls of your feet on the surface. Just make sure to avoid rubbing your skin too hard on the surface where you're practicing to avoid getting scrapes (which can happen even when you're wearing pants).

Prone Forearm Alternating Pull-Push Drag

This technique, in which you have both forearms on the ground in a bent position to create a short but strong range of motion, is an effective way to drag yourself and slide forward. Pulling alternately with both arms helps you move continuously without having to stop to reset the position of your arms. Depending on the terrain, this type of movement allows you to maintain or even gain momentum.



1 Start in a Prone Lying position. Keep your legs fully extended. Place your arms in front of you and bend them to about a 90-degree angle. However, the angle is adaptable and may vary from 90 degrees to completely straight (forearms pointing forward) depending on what position allows you to get the most friction from your arms with the terrain on which you're performing the move. You may start with your arms either slightly staggered or level. You want to start with level arms if it facilitates generating the initial momentum.

2 Begin pulling with both arms simultaneously to have enough strength to generate the starting motion. You immediately feel that most of the friction comes from the elbow area, to the point that you could lift your forearms and only keep your elbows on the ground. Press down on your forearms more if it helps you maintain or gain friction as you pull.

Keep pulling to the point where the shoulder of the rear arm goes farther forward than the elbow, which turns the pulling motion into a pushing motion. If you started with arms level start moving one arm forward as your shoulders reach a vertical line with your elbows.

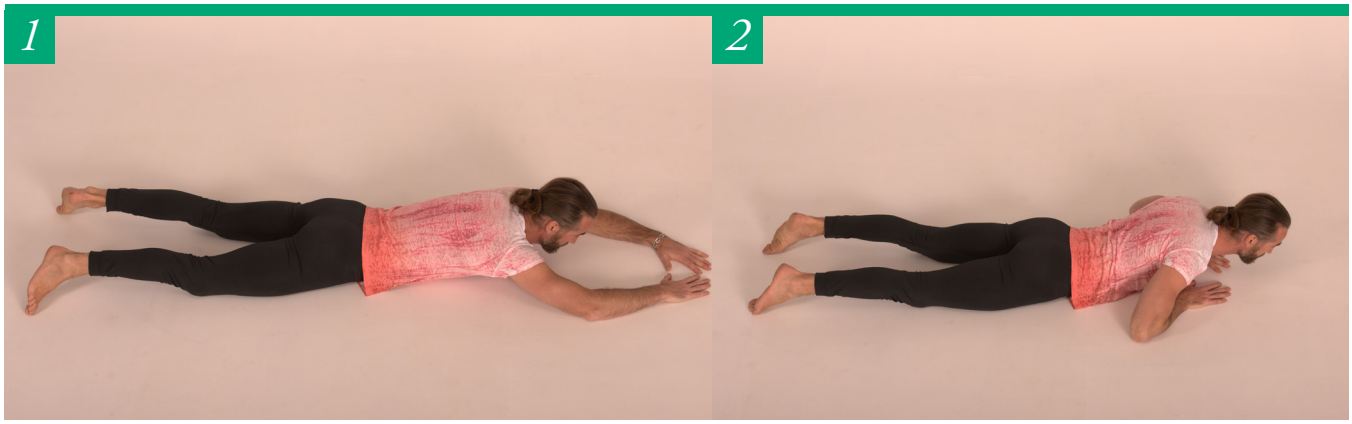
1 As you reach the point at which your rear arm is extended as much as possible, immediately shift weight to the front arm that is still pulling (then pushing) while reaching your rear arm to the front, so you can keep pulling quickly using that arm and keep the whole body in motion without interruption.

TECHNIQUE TIP

You may keep your forearms joined with no space between and pull from both arms simultaneously until the shoulders vertically reach the farthest beyond forearm level and your body comes to a stop. From there, move first the front then the rear arm to the front, so you can start pulling again with both arms. This variation is slower because you come to a stop each time you move your arms to the front, but forcefully pulling from both arms at the same time when they're joined together can give you the strength that would otherwise be lacking when you use alternating arm pulls.

Prone Forearm-Pull Drag

This variation gets its momentum from pulling with both arms simultaneously.

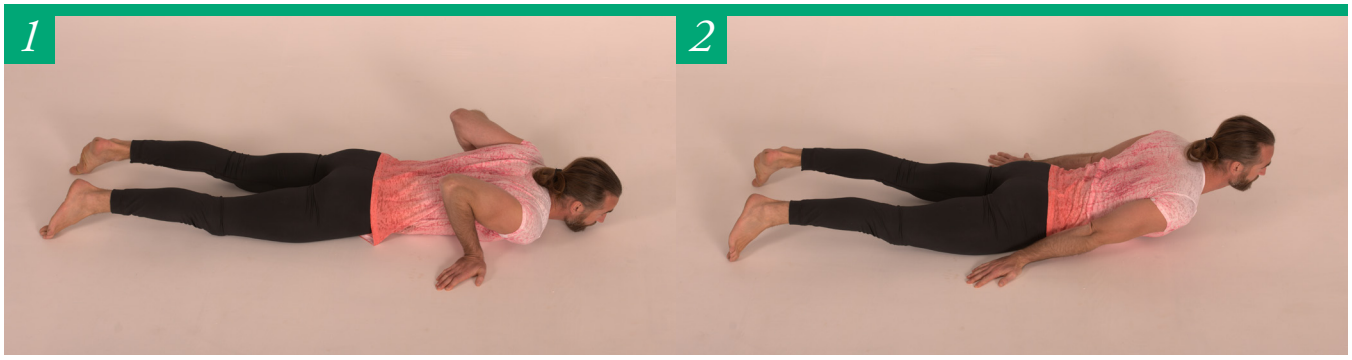


1 Start in a Prone Lying position with both arms extended in front of you with a slight bend in your elbows. Your forearms are in contact with the ground. Your hands should be touching or close to touching.

2 Press down on your forearms to ensure friction and elevate your chest slightly off the ground, then forcefully pull from your forearms until your shoulders reach elbow level or beyond. Extend your arms to the front again and repeat.

Prone Hand-Push Drag

This variation gets its momentum from pushing with both arms simultaneously.

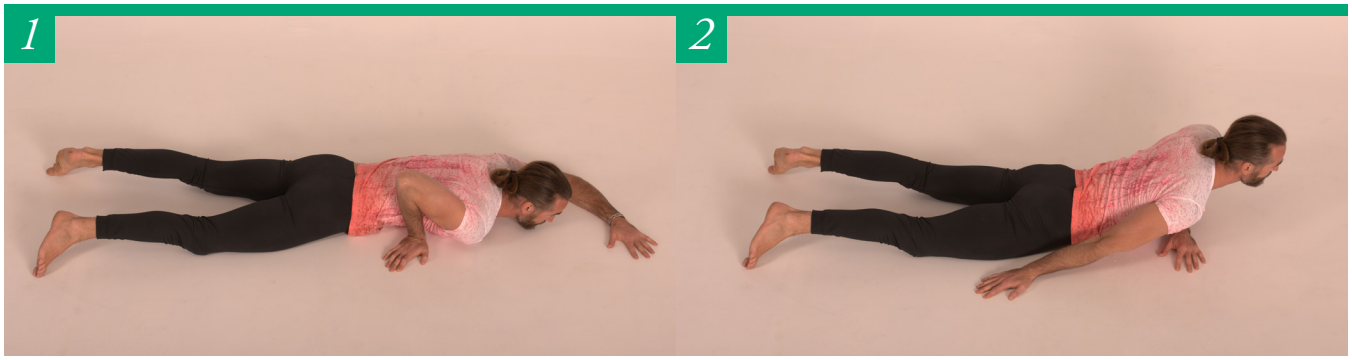


1 Start in a Prone Lying position, with your arms fully bent to the back below shoulder level; your hands are flat and externally rotated with your fingers pointing outward to the side or the back. The closer your hands are to your shoulders, the greater power you can generate and the greater the distance you can cover.

2 Start pressing down on your hands to elevate your chest then forcefully push off your arms as you keep your chest off the ground. Fully extend your arms to move your body as far forward as possible, then return to your starting position and repeat.

Forearm Hand-Push-Pull Drag

This variation gets its momentum from a combination of pulling with one arm and pushing with the other simultaneously, which can help greatly with slippery terrains.



1 Start in a Prone Lying position with one arm fully bent to the back just below shoulder level; that hand is flat and externally rotated so your fingers point to the side or the back. The other arm is reaching to the front with a slight bend of the elbow, and your forearm is in contact with the ground. The front elbow and shoulder are aligned, and the front hand is aligned with the back shoulder.

2 Press down on your hand and forearm to elevate your chest slightly off the ground, then simultaneously pull with your front arm and push from your back one until you're reached the farthest you can move forward. From there you can reposition your arms in their original positions, or switch to the same arm position using the opposite arms.

Hand Push-Pull Drag

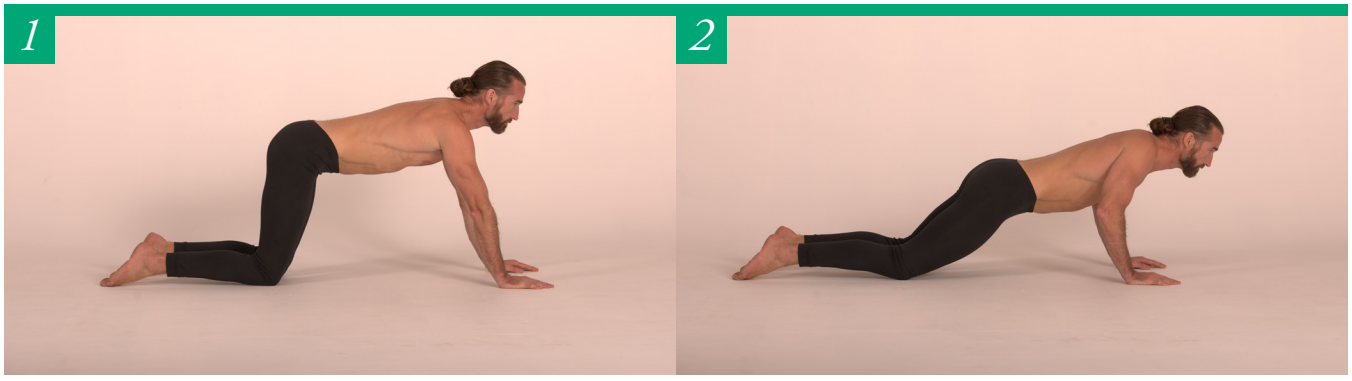
The Hand Push-Pull Drag is often used to crawl under a very low obstacle (such as under a fallen tree or through a cave) that makes it impossible to elevate your hips and push from the legs. After your upper body as passed the obstacle all the way to the lumbar area, you use your arms to drag your lower body to make it slide forward to finish clearing the obstacle.

This movement involves elevating the upper body to a Full-Press Prone Lying position, so it's great at strengthening the upper body (if you make sure to alternate arms as you push and pull), and it also improves lumbar and thoracic spine mobility.

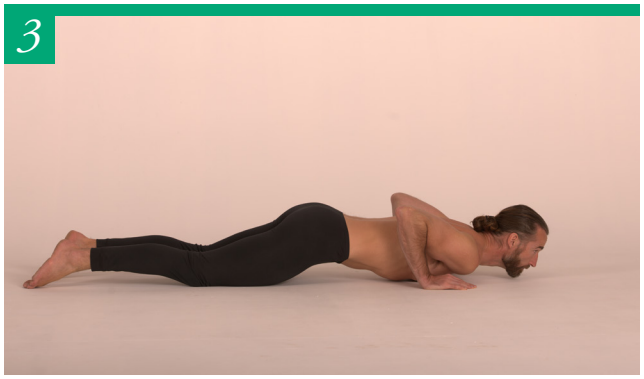
Knee-Hand Press-Up

Another way to solidify your lockout arm reflex and position is the Knee-Hand Press-Up. The Knee-Hand Press-Up is a downward or upward transition from a Prone Lying to a knee-hand position. This movement is useful if you intend to lower yourself to a Prone Lying position or any form of Prone Lying crawl, or conversely if you want to elevate your body to a knee-hand position or a kneeling position.

It will not fully prepare you to do full Press-Ups (or Push-Ups) because it greatly reduces the abdominal strength necessary to stabilize through the core as well as the upper-body strength necessary to press-up; however, it can help reinforce proper shoulder, arm, and upper-body position. It may help build some upper-body strength, especially if you do it powerfully enough to push yourself up all the way to the Tall Kneeling position and control the descent back from the Tall Kneeling position with a strong deceleration.



1. Start in a square Knee-Hand stance with your arms in the lockout position. Slide your knees backward a few inches. Your hands are pointing forward.
2. Press down and lower your hips and torso, keeping your elbows against your rib cage and pointing back; your shoulders are retracted.
3. Lower your chest until it almost contacts the ground or reaches it very briefly and immediately push yourself back and up.



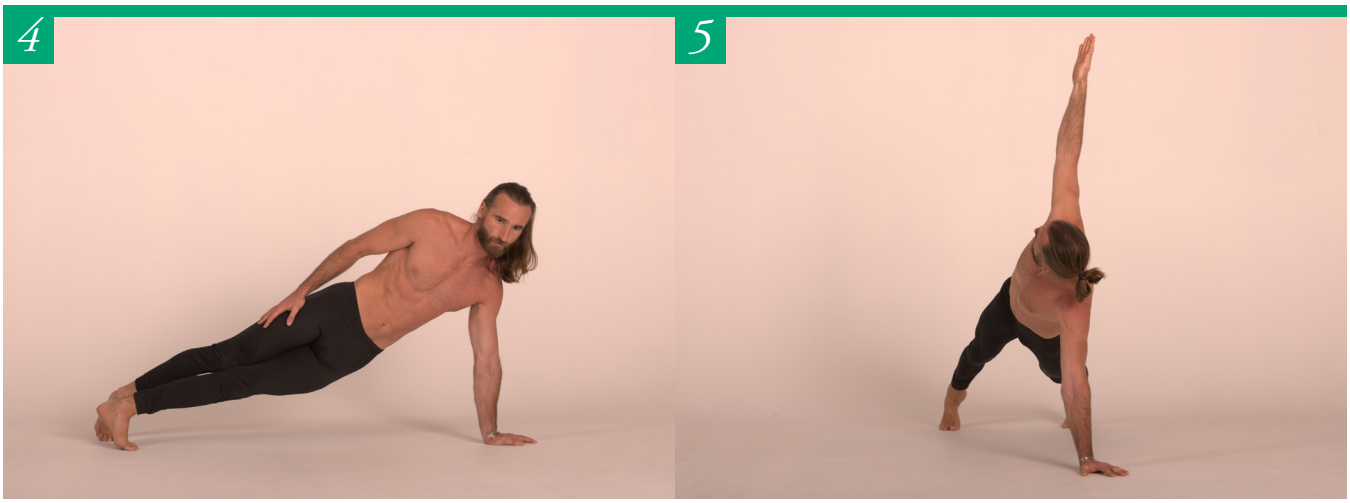
Extended Foot-Forearm & Foot-Hand Positions

These positions are used to transition from crawling to another type of crawling or movement, to stop and reach with an arm, or to wait a moment before resuming motion. Commonly known as "planking" as you need to keep your legs fully lengthened and the whole body straight as a board from feet to head, these positions can be quite challenging to hold because they require you to stabilize through the core (abs, glutes, lumbar spine, and hips) to maintain alignment in your upper and lower body. You also keep your arms in full lockout position to be optimally stable. Practicing these positions will greatly help your ability to perform the Foot-Hand Crawl with great form and efficiency. They are also a perfect complement to abdominal breath practice. The position of your feet can be closed, open, flexed-foot, or extended. You may align your head with your spine or tilt it very slightly back as you would do in most practical situations where you need to maintain forward vision.

TECHNIQUE TIP

Like other ground positions, you may turn transitioning from one variation to another into a movement practice, making sure to hold each position for at least a few seconds with good form.

1. Foot-Single-Forearm position with arm extension. You can hold the position with both forearms on the ground.
2. Foot-Single-Forearm Side position.
3. Foot-Hand Plank. Your hands are vertically aligned with your shoulders or slightly behind or in front of them. You may shift your body weight back and forth as a drill to strengthen your shoulders, arms, and wrists. Your hands may be shoulder width, touching each other or superimposed (one is on top of the other), or wide apart.



4 Foot-Single-Hand Side position. Notice the supporting arm is in full lockout position, and the shoulder is externally rotated. This strengthens your obliques (side abdominal muscles).

5 Foot-Single Hand with Trunk Rotation and Arm Extended Upward. The supporting arm in full lockout position.

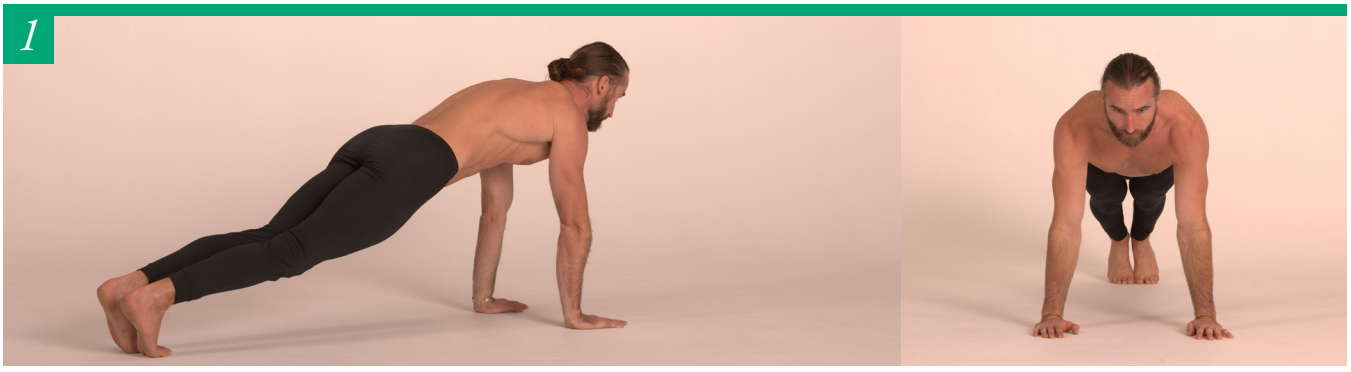
Foot-Hand Press-Up

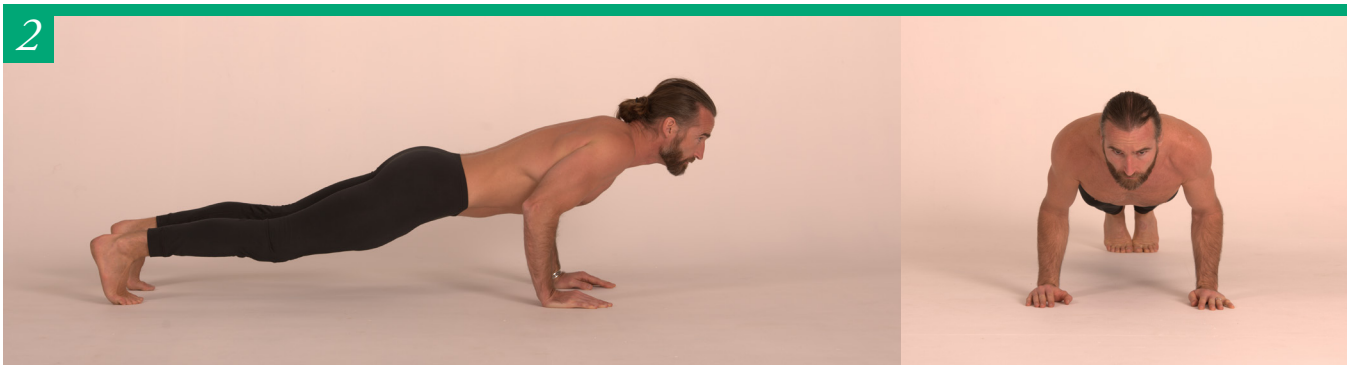
You might know this movement by its more common name: the Push-Up! Some people consider this the king of fitness exercise. It does have great value, but not as much as most people think. It is often stated that it is a "full-body" exercise, but I strongly disagree with this statement. (The idea of a "full-body" exercise is a myth to be debunked.) "Full-body" would mean that something develops strength in the whole body, but does this movement do that? The push-up does nothing for developing power in the back, legs, hips, and abs (the latter merely help stabilize the body in the "plank" position). The Foot-Hand Crawl movement described later qualifies more as a "full-body" movement.

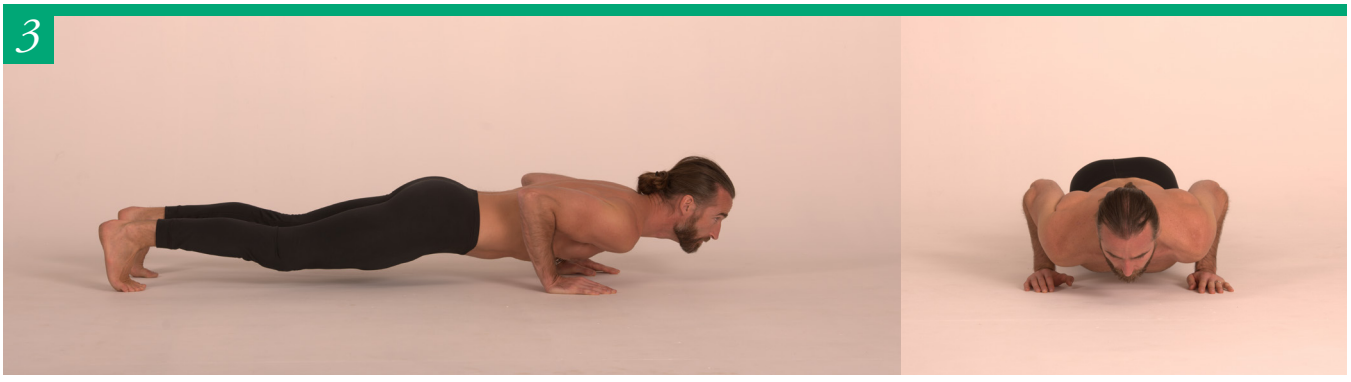
Anyway, do we even remember the practical use of the Press-Up movement? It helps lower the body to the ground, for instance before crawling in a Prone Lying position. You can use it to quickly get down to the ground from standing or after landing following a Depth Jump. Conversely, it enables a powerful transition up from a Prone Lying position to a Foot-Hand Crawl or even to standing.

When done repeatedly both up and down, the Press-Up becomes an anterior upper-body strength drill that mainly strengthens the pectoral, shoulder, triceps, and abdominal muscles, plus smaller muscles with names too long and complicated to be worth mentioning. That's quite a convenient exercise if you lack time, space, equipment, imagination, or the desire to move in diverse functional and adaptable ways rather than focusing on your bulging chest and arms. If you want to be good at the Foot-Hand Crawl, you need technique more than the level of strength developed with the Press-Up, and the Contralateral Single-Foot, Single-Hand drill that follows will help more. However, learning to press up with good form and developing the strength to do it powerfully is quite helpful when you need to lower your foot-hand position to go underneath an obstacle or when you're sprawling to get down to the ground and then returning to a standing position.

The point is, even though you may sometimes isolate the pattern for the sake of strength, never lose sight of the practical purpose of this pattern and try to keep it part of the bigger natural sequence that allows equal strength development.







1 Start in an Extended Foot-Hand stance with your legs fully lengthened, arms in the lockout position, and externally rotated, while keeping your hands pointing forward. Your shoulders are retracted. Maintain body alignment and contract your abdominal muscles and glutes to keep your back in a neutral position. I like to keep my neck slightly extended to maintain a forward line of vision, but head and neck position is variable and depends on context. Spreading your legs apart helps stabilize your overall position, whereas keeping them together helps you develop greater stability. Remember that the rule is to be comfortable in any positional variation.

2 Keep your elbows vertically aligned with your wrists as much as possible and press them against your ribcage as you lower your chest until it almost contacts the ground or reaches it very briefly; then immediately push yourself back up. On the way up, keep your elbows vertically aligned with your wrists, your elbows close to your body, and your shoulders retracted.
Maintain a tight core all the way—no sagging, no wobbling, no rotation.

3 In a practical context you may stay down in a Prone Lying position with your chin resting on the ground, so you can keep looking forward, or you can turn your head to the side, with your head resting on the ground or held above it.

Variations of the Press-Up involve hand positions, which can be closer to each other or wider than shoulder width, sometimes with your hands pointing inwardly or even staggered. If you are strong enough to do it that way, why not occasionally do it when you're doing a single Press-Up within a complete movement sequence, such as getting up? Otherwise a wider base of support with the elbows out only lengthens the arm lever, which decreases leverage and makes the movement more energy-consuming.

As a strength and conditioning drill, you may add more repetitions, perform the Press-Up faster, or even press up so powerfully that your arms will briefly go off the ground.

Common Faults

A practical variation of the Press-Up starts or ends in the Prone Lying position on your forearms (or you can be prone but pushing yourself up so you're slightly elevated above the ground). This variation allows you to press up and transition directly to the Foot-Hand position without repositioning your hands and arms in the regular Press-Up position. This variation places more emphasis on your triceps, but it also places more stress on your tendons.

Inefficiencies of the Foot-Hand Crawl (i.e. from pages 213 - 216 in *The Practice of Natural Movement* book).

Faults

Inefficiencies for the 4/2 points of support pattern are like the inefficiencies for the 4/3 pattern. With this pattern, you might have more frequent issue with the following things:

1. Your waist swaying sideways, which forces your arm to bend to compensate and maintain balance and causes lots of unnecessary tension. If you must bend your arms to pass underneath a low obstacle, the hip rotation becomes necessary and turns the neutral Foot-Hand Crawl into a Rotational Foot-Hand Crawl.
2. A too-compact base of support that forces your hips up and head down; it also causes you to have a rounded back.
3. Stepping way too far to the front with your foot touching or even going beyond the hand, which usually ruins your position and coordination with the next step.

TECHNIQUE TIP

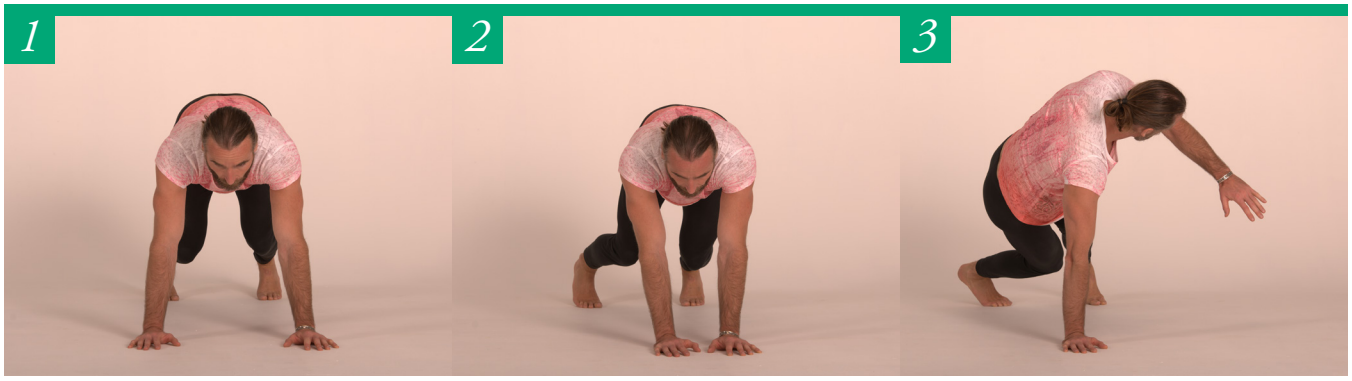
A very effective fix is to place a sand bag (or any other object that can spread over the surface of your neutral spine) evenly on your back. It gives you immediate feedback regarding your positional integrity. As you start crawling, any inefficiency will be magnified as the load makes you feel your imbalances, instability, and improper position, even if you manage to keep the load on your back.

When you are Foot-Hand Crawling very fast, you generate a brief airborne phase—during which you have zero points of support—before you progressively land on your feet and hands and propel yourself to the next airborne phase, just like quadrupedal animals do. You may also Foot-Hand Vault, which means you push off both feet with both arms reaching out and forward, propelling you to a brief airborne phase, before you land on both hands and then both feet (which can be done once or repeatedly). This a ground movement, yet it is more akin to a vaulting pattern that can be done over elevated obstacles.

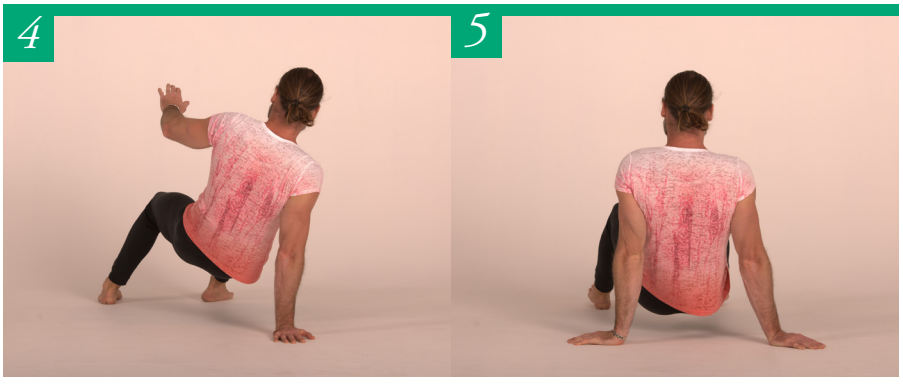
Foot-Hand Crawl *to* Inverted Foot-Hand Crawl Transition

So far, you have crawled on all fours limbs while you're facing down (prone). Before you learn the Inverted Foot-Hand Crawl, which is a supine position, you need to learn to transition from a prone Foot-Hand Crawl position to an inverted one, which of course can be used the other way around. This transition is a rotational, hip-driven movement that resembles the "Tripod Get-Up," so focus on this motion to make it effortless.

1. Start from either a square or staggered Foot-Hand Crawl position.
2. Briefly shift your body weight to one hand so you can move the other arm inward to place the hand in front of your head and aligned your body's midline, which gives you a narrower base. Shift your body weight onto the hand you just moved to make that arm your support. If you started with staggered feet, it is best to move the hand on the same side as the front foot.
3. With the supporting arm strong in the lockout position, shift your body weight toward the opposite foot and rotate your hips in the direction of the opposite arm. This motion starts inverting the position of your torso, which makes you naturally lift your arm up and release the hand.



4. As you keep driving through the hips, start pivoting on the foot opposite to the supporting arm and simultaneously release the foot and leg on the same side as the supporting arm. As gravity pulls your center of gravity towards the supine position, finish pivoting on the foot and place the foot of the moving leg on the ground, either level or staggered.
5. Finish the movement by placing your moving hand level with the other hand as you assume the Inverted Foot-Hand Crawl position.



Once in the inverted foot-hand stance, you may immediately explore variations by shifting body weight to one side then the other, shifting weight toward the hands then feet, releasing one hand, extending an arm, and so on.

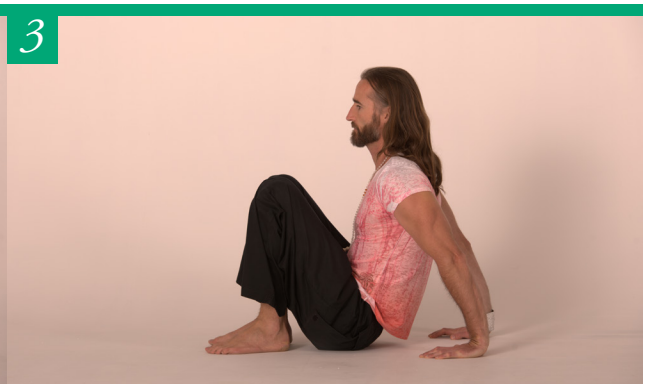
Seated Inverted Foot-Hand Crawl

Now that you are in the Inverted (or supine) Foot-Hand Crawl position, it won't be long before you learn to crawl that way. However, it is easy to get confused when you're mindfully developing an efficient Inverted Foot-Hand Crawl pattern. The seated version is a great way to get ready for it. It's also a practical movement that enables you to crawl on all fours in a supine position while making brief pauses in a Bent Sit position, which is handy when you must cover very short distances, for instance to move so you can sit a bit further away from your starting position.

TECHNIQUE TIP

As a perception drill, it helps to understand where motion mostly comes from in the Inverted Foot-Hand Crawl: You push off the feet when you're moving backward, and you pull off the heel through the hamstring when you're moving forward.

Moving Forward



1. Start in a Bent Sit position with your legs more extended and your feet further away from the body than when you're in a regular Bent Sit. Your hands rest on the floor next to your hips or slightly in front of them (toward your feet).
2. Press your hands and fully extend your arms in the lockout position, lifting your rear off the ground and shifting most of your body weight onto your hands. In this position, your shoulders, elbows, and wrists are vertically aligned, and your back is straight. Point your hands in whatever direction feels comfortable to you. Press down on your heels to create friction.
3. Contract your hamstrings to pull and drive your body toward your feet through your hips—bringing your rear as far as possible toward your feet—then sit briefly with your torso slightly leaning back and supported by your arms. From there, push off your hands to lean forward and, as you release your hands, move them forward and place them at the level of your rear or slightly beyond while you simultaneously extend your legs and place your feet further forward. Assume the start position again and repeat.

Removed from Chapter 25, Ground Movement 2: Sitting, Kneeling, Getting Up (i.e. from pages 219 - 267 in *The Practice of Natural Movement* book).

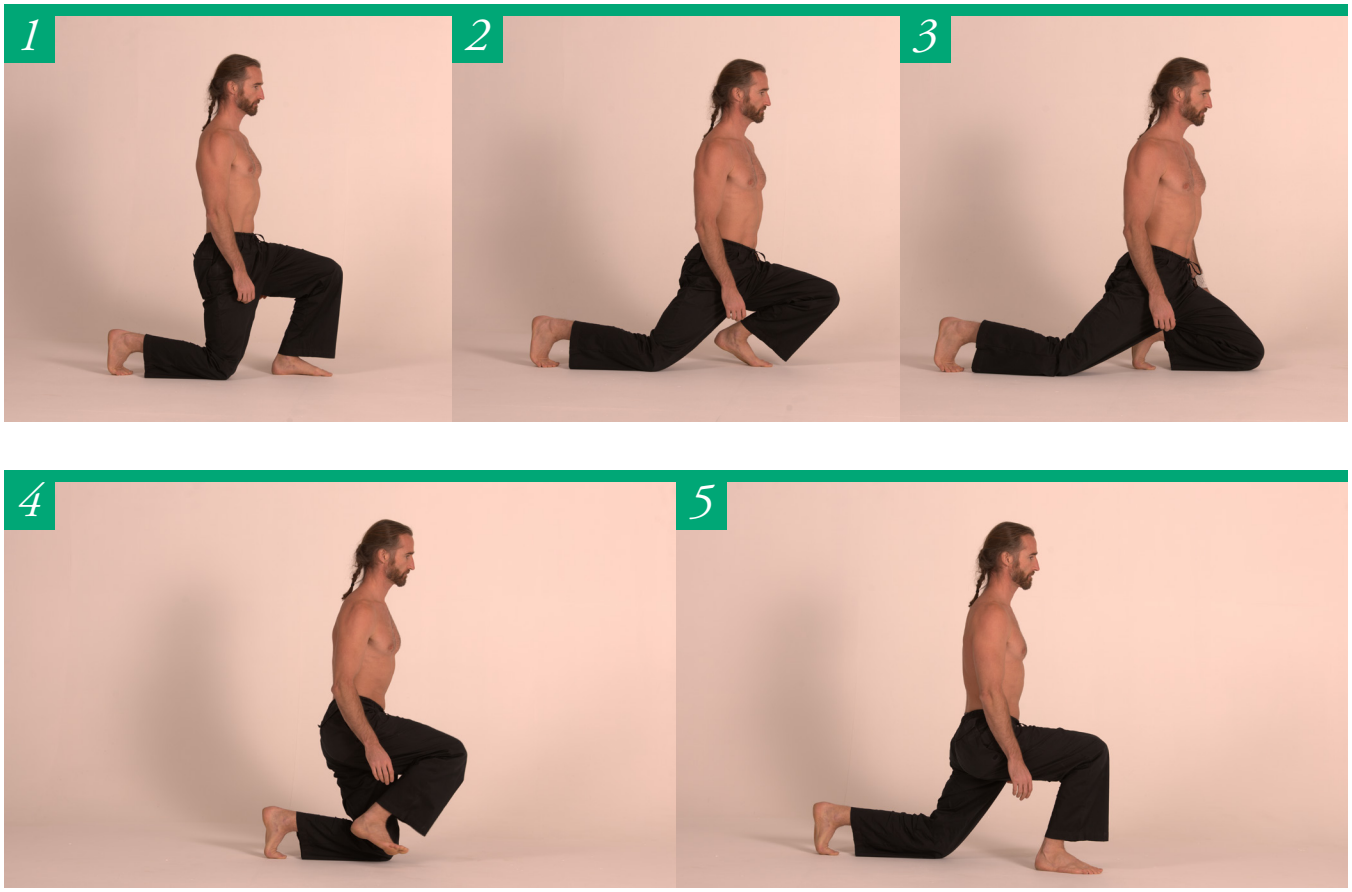
Tall Kneeling Walk

You can turn tall kneeling into a walking pattern, which enables you to cover some distance rather than staying stationary. You can't walk quickly this way but it may be convenient for covering short distances as you stay close to the ground; you also can transition quickly to standing or to a crawl from a Tall Kneeling. You can go forward or backward, or you can shuffle sideways. Technically, the Tall-Kneeling Walk is a cyclical transition between the Tall Split Kneeling (photo 1) and the Single-Knee Tall Kneeling (photo 2) positions.

Your feet can be extended or flexed; the flexed-foot position helps with greater stability. This kneeling pattern is like regular walking (see page 000), except that balancing on a single knee can be quite challenging, especially if you're walking slowly. If that is an issue, practice the Single-Knee Tall Kneeling stance on both sides to develop better balance before walking that way.

Flexed-Foot Half-Kneeling Walk

This a is a strongly grounded and stable kneeling movement that's most often performed to move forward to cover a short distance with a low center of gravity—for instance, when you're stalking something. It's is also an explosive transition heavily utilized in grappling to take an opponent down to the ground. You should develop great stability from bottom to top and gain the ability to perform the movement with impeccable positional integrity and breath control while keeping your arms down and relaxed. Ultimately, you should be able to walk this way regardless of your arm and head position. The technique can be performed both forward and backward. It's a fantastic stability practice when you do the movement as slowly as you can.



1. Begin in the Tall Flexed-Foot Half-Kneeling position.
2. Push off the back foot and drive your hip and front knee forward, which starts lowering your knee and elevates the heel of the front foot.
3. Finish lowering your knee all the way to the ground, with your heel all the way up and your foot flexed to its maximum range of motion. Pause in this position if you're not fully stable rather than rushing to move forward while off-balance.
4. Shift all your body weight to the front leg (photo 3) so you can freely pull your back leg toward the front while balancing on the supporting leg.
5. Finish the cycle by firmly stepping to the front in the Tall Flexed-Foot Half-Kneeling position on the side opposite of where you started.

Ground Walk

You can walk using a low-center-of-gravity bipedal position such as the Deep Squat, the Deep Split Squat, the Deep Knee Bend, and the Single-Leg Deep Knee Bend. These forms of walking belong to both ground movement and gait.

Movement variations can include the following:

- Shuffling sideways from a Deep Squat to a Narrow-Base Deep Squat to a Deep Squat. The same can be done in a Half Squat, a Deep Knee Bend, or a Half Deep Knee Bend.

- Stepping forward from the Deep Squat by pivoting on the ball of your front foot and switching orientation (so you end up facing the opposite side each time you step forward). The same can be done in a Half Squat, a Deep Knee Bend, or a Half Deep Knee Bend.

Deep Split Squat Walk

The Deep Split Squat Walk can be grueling despite its simplicity. You start in a Deep Split Squat and shift to a potentially precarious Single-Foot Deep Knee Bend while moving the non-supporting leg forward to establish the Deep Split Squat again.

Another form of Deep Split Squat Walk, the "lunge walk" or "walking lunge," is a very common exercise in the conventional fitness world, military physical training (PT), and sports strength and conditioning. You start in a Deep Split Squat, step up to standing, and then step forward to the Deep Split Squat on the other side, or you can do the same transition while keeping your body low and your head level.

Extended Split Squat Walk

The Extended Split Squat Walk can be useful when you must walk close to the ground.

It is a lower, more complex, and more difficult version of the Deep Split Squat Walk. It has more to do with the Deep Knee Bend and involves a swift transition between four distinct positions: a wide and low Deep Split Squat, an Extended Split Squat, an Extended Split Deep Knee Bend, and a Single-Foot Deep Knee Bend. The Single-Foot Deep Knee Bend is the most challenging part of the whole movement as you are literally tiptoeing and balancing on a single foot while pulling your leg from the back to the front of your body.

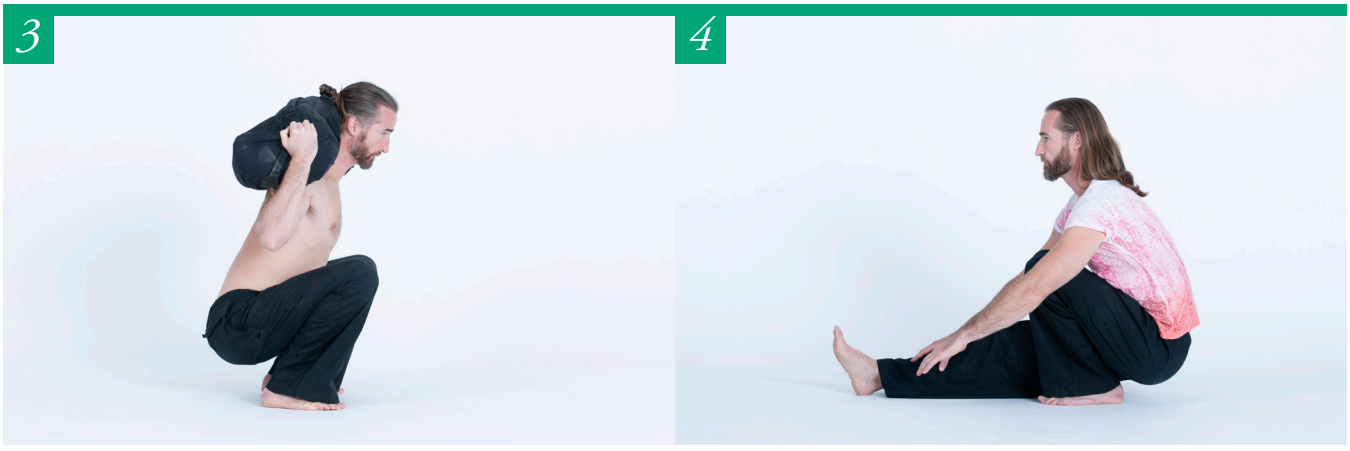
This walk requires an equal amount of foot and leg strength to be done correctly; you must stay balanced while keeping your head pretty much level.

1. Start in an Extended Split Squat.
2. Push off the back foot to fully extend the back leg and drive the hip forward. Lower the front knee as you shift weight onto the ball of the front foot and elevate the heel, shifting about 80 percent of your body weight to your front leg in an Extended Split Deep Knee Bend.
3. Slightly push off the back foot then immediately pull your back leg forward to bring your body to a Single-Foot Deep Knee Bend.
4. Step forward in an Extended Split Squat on the leg you just pulled forward.

Squat Get-Up Variations and Progressions

1 **Assisted Squat Get-Up:** You want to practice the Squat Get-Up, but you haven't mastered the Deep Squat yet. Good news! You don't need to wait. Find a vertical bar, pole, or anything your hand can vertically slide on. Progressively minimize how much support you get from your hands until you can do it without any support.

2 **Arm reaches (forward arm reach [1] and overhead arm reach holding a dowel [2]):** Reach forward, sideways, or upward with one or two arms, while maintaining abdominal breathing and balance.



3 **Loaded Squat Get-Up:** After you have achieved the unassisted Squat Get-Up, you can use light loads. While this turns the pattern into a manipulative action, the point is not to develop strength and power, but to help you improve mobility, stability, balance, and control. You can hold the load at chest, upper back, shoulder, head, or overhead level. However, the three loaded variations that will help you the most with positional control, mobility, stability, and balance are the last three. You can find them explained in Chapter 31, Manipulation Movement 1: Lifting, Carrying."

4 **Single-Leg Squat Get-Up:** This is the peak in ankle-knee-hip stability if you can do it slowly in a controlled fashion on both sides.

Push Squat Get-Up

A very simple and easy way to stand up from sitting or sit down is to squat on the spot with the assistance of both arms.

Getting Down

1. From standing, lower your center of gravity by starting to squat. Bring your hands down and reach out to the ground directly beneath you.
2. Continue to lower yourself under control. You can either squat fully and then contact the ground with your hands before shifting your body weight back onto them as you lower your rear, or you can reach the ground with your hands and start shifting body weight on them without reaching the bottom squat position.
3. Keep lowering yourself to the Bent Sit (or Long Sit) without heavily landing on your rear.

Getting Up

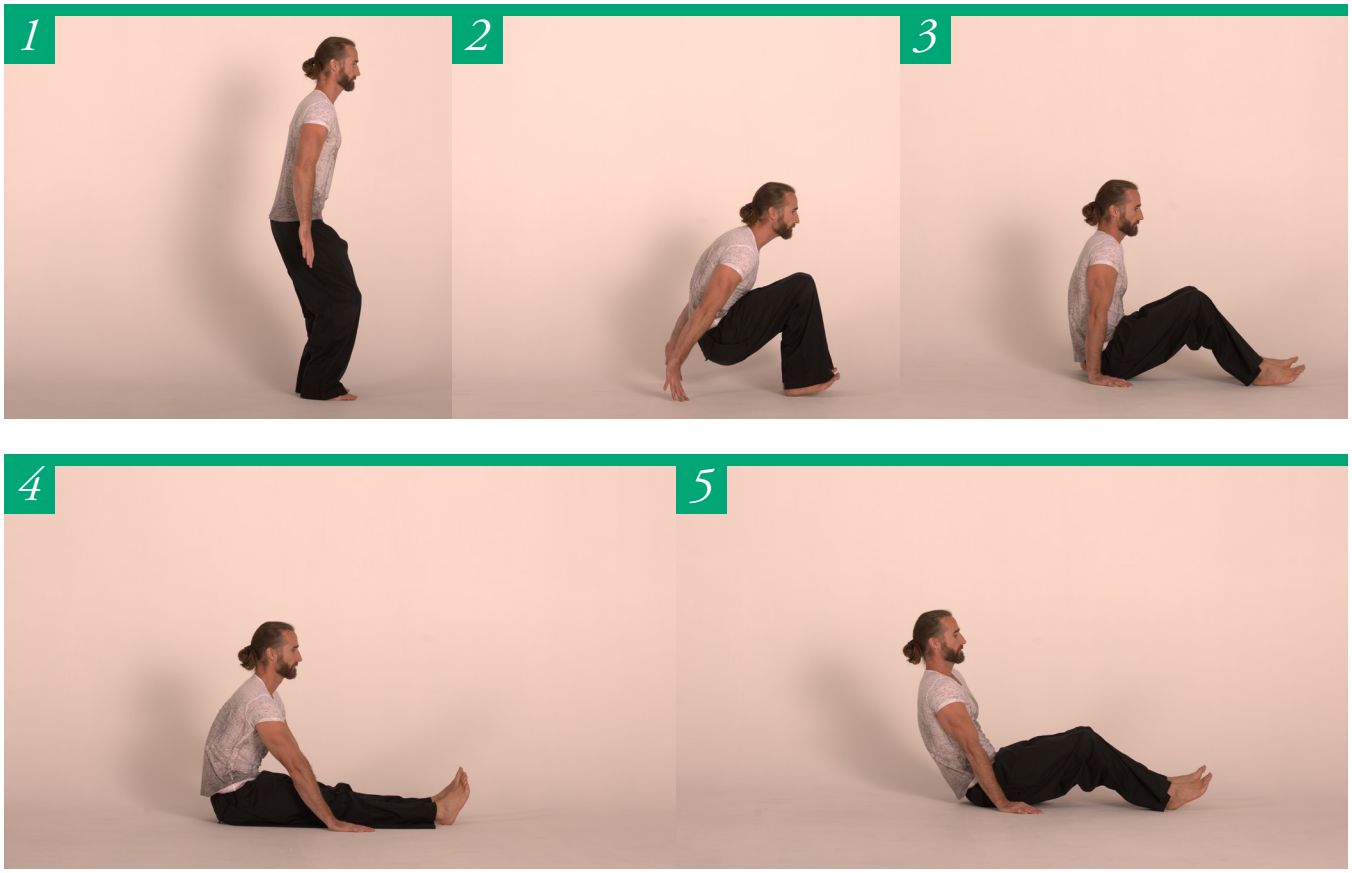
1. Start in the Bent Sit.
2. Plant both hands on the ground just outside your rear (with your fingers pointing out if you lack flexibility in your wrists), then bring your feet toward your rear to bring your center of gravity vertically closer to a smaller base of support. Push off your arms to elevate your rear off the ground. Alternatively, you can push your hips toward your feet if they are at a distance from your rear, but this method consumes more energy. Finish standing.

Push Slide Squat Get-Up

This movement is like the Push Squat Get-Up, but it's a swifter way to sit down safely from a standing position with the assistance of both arms. This move is most often used when you unintentionally (and occasionally intentionally) fall backward so that you avoid falling hard on your tailbone or your back—or even hitting the back of your head.

You use hip drive and push off your arms to generate a sliding motion that creates backward distance and momentum (which can be followed by a back roll when the backward momentum is too strong for the sliding motion to be enough to safely bring the body to a stop). Using this movement to get up is a dynamic way to push yourself to a Squat position before you stand up.

Getting Down



1. As you begin to lose balance backward while you're standing, bend your knees to lower your center of gravity and bring your hands down and back.
2. Reach toward the ground behind you with both hands, bending your torso forward to prevent losing balance and falling on your back.
3. Once your hands reach the ground, use your arms to slow your descent by keeping your hips elevated slightly as you start extending your legs to drive your hips and push your body backward until your rear contacts the ground between your hands.
4. Allow the momentum to rock you back slightly to disperse the momentum of the fall so your wrists do not take the full force.
5. Finish in a Long Sit.

Getting Up

From the Long Sit, place both your hands to the front as far as knee level. Lean forward in a rocking fashion to generate forward momentum and then forcefully push off your hands to start elevating your rear off the ground. Immediately pull from your heels planted on the ground to drive your hips forward and create enough momentum to reach the Deep Squat.

NOTE

In this context, "pull" means the same as in the Inverted Crawl where the heel serves as an "anchor" from which you flex the leg by contracting the hamstring.

Foot-Hand Get-Up to Prone Lying

A simple, smooth, and controlled way to get-up from Prone Lying position or to stand up from that position is to do it in a “foot-hand” fashion, with different options.

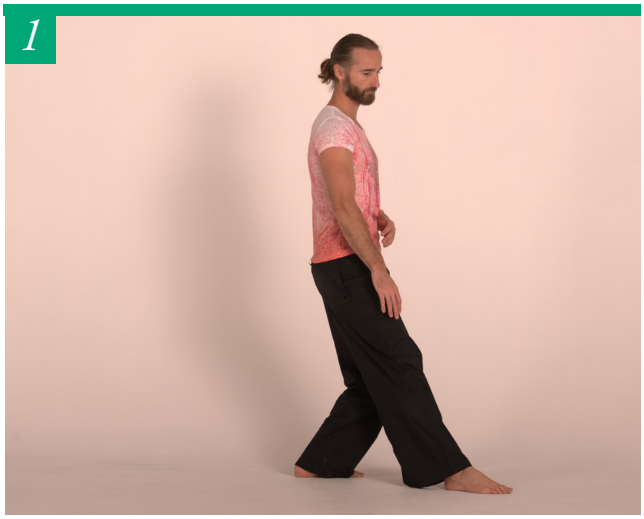
Back Foot Walkout

1. From standing, Hip Hinge and place both hands on the ground in front of you, directly underneath your shoulders or a little further to the front.
2. Either step forward or back as far as possible with one foot.
3. To finish lowering your body fully on the ground, first step back with the other foot in a “plank” fashion and either walk your feet back, or let your feet slide back as you descend onto your forearms. Optionally, you may walk or slide your hands forward to full extension to achieve the prone lying position.

Front Hand Walkout

1. Start similarly to the back foot walkout (photo 1) then walk your hands forward to keep lowering your body to lying (photo 3).
2. Alternatively, you may lower your body only to the foot-hand or foot-forearm level.

Getting Down



Side Lying Get-Up

This movement is a convenient way to stand up from a Supine or Side Lying position without having to sit or switch to the Prone Lying position first. For getting down, it ensures a smooth transition from standing directly to Side or Supine Lying positions.

1. From a Split Standing position, shift your weight onto your rear foot.

2 Lower your center of gravity, sliding the heel of your front foot forward and turning so that the outside of the front leg faces the ground. Reach for the ground with the arm on the same side as the front leg. Bend the opposite arm toward the side where you intend to lean.

3 Lower your weight onto the thigh of the extended leg and contact the ground first with the palm then the forearm as you keep lowering your body to the side of the hip.

4 Lie back on your side, tilted toward the direction of the extended leg. Tuck your chin to keep your head from swinging backward. Bring your extended arm into contact with the ground up to the back of your shoulder. Your other arm should be bent if you want to prevent leaning back to the other side in a Supine Lying position. Otherwise extend it toward the other side and lean back in a Supine Lying position.

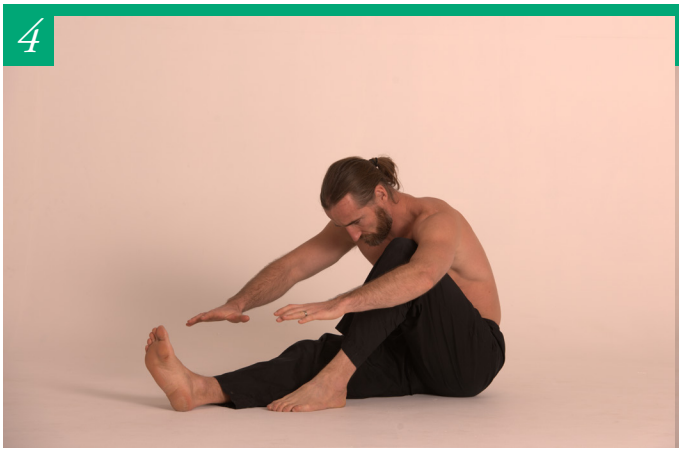
Removed from the Single-Leg Squat Get-Up section (i.e. from pages 256 - 257 in *The Practice of Natural Movement* book).

Faults and Corrections

1 **Fault:** Pelvic posterior tilt. This is by far the most important fault in this movement. Your lower back is rounded and will totally prevent you from being able to pull your hips forward and up. It doesn't matter how much you try—even if you try to reach with your arms, lean your torso forward like crazy, and rock on your back to create lots of forward momentum; a posterior pelvic tilt will defeat you.
Correction: Tilt your pelvis toward the front as much as possible before you attempt the transition to the Single-Leg Deep Squat.

2 **Fault:** Trying to push yourself upward. This is the second worst mistake. In this movement, your center of gravity travels both horizontally and vertically, but it must first travel horizontally. By trying to push yourself up vertically before your center of gravity has travelled horizontally, you push yourself backward and fall on your rear rather than pulling yourself forward.
Correction: Think "pulling forward" rather than "pushing upward." Keep your upper back slightly rounded and keep pressing your torso forward against your bent leg, while focusing on pulling yourself forward through pressing down on the grounded heel and strongly pulling from the hamstring of your bent leg to drive your hips forward and shift your body weight onto the heel. You will actually push off the grounded foot only when you want to transition from the Single-Leg Deep Squat to the Deep Squat or to the Deep Split Squat.

3 **Fault:** Torso leaning to the inside. Leaning to the inside pushes you off balance toward the side of the extended leg.
Correction: Sit with a vertically straight torso.



4 **Fault:** Leaning to the outside. Leaning to the outside pushes you off balance and makes your hips and rear slide to the side opposite where you are leaning.
Correction: Sit with a vertically straight torso.

5 **Fault:** Keeping the foot and heel of the bent leg away from the rear. It makes your base of support too wide and the distance to be travelled by your center of gravity to be above the next base of support too long.
Correction: There are four strategies available to fix this and create an optimum base of support with the heel directly against the rear, if not under the buttock. The first one is to pull your foot back with your arms. The second one is to elevate the buttock under the bent leg by shifting weight to the opposite side, then swiftly pull the lower leg to bring the heel very close to the rear. The third one is to leave the heel where it is, "anchor" it by pressing down your heel, and sliding your rear forward until it reaches the heel before you initiate the get-up. The last strategy is to use the forward momentum generated when sliding the rear toward the heel to help a direct transition from the Long Bent Sit to the Single-Leg Deep Squat.

6 **Fault (no photo):** Keeping both buttocks down and driving the hips straight forward. You may be able to pull it off, so this is not necessarily a fault per se. However, most people might feel that their pelvis "bumps" against the thigh and back, which prevents the center of gravity from moving forward and up.
Correction: Slightly shift your weight toward the buttock of the extended leg to allow the hips to move forward a little bit more before you start the movement or do so as you start to pull yourself forward. This allows a brief sideward motion of the hips, which naturally and immediately moves back above the supporting foot.

TECHNIQUE TIP

It's also worth mentioning wannabe faults that are not actual problems. First your torso should not necessarily push against the bent leg, which could be slightly rotated internally or externally but will naturally reposition itself to pointing straight as the rear elevates and all body weight is shifted onto the supporting foot. Secondly, the position of the extended leg is not overly important, as it could be slightly open and pointing externally, or even bent and resting flat on the ground.

Variations

Now that you have successfully managed getting up to the Single-Leg Deep Squat, what do you do? Well, you may simply pull the extended leg back to a Deep Squat stance. Of course, you need to be very strong on your single point of support to do this movement in a stable way.

You may also go for one of three variations. Technique wise, the variations are the same Single-Leg Deep Squat Get-Up movement; the only difference is that you enter or exit it differently.

Variation 1: Split Squat Position

Getting Up

From the Single-Foot Deep Squat (photo 1), keep pressing your torso against your thigh as you lower your knee and flex the foot of the bent leg into a Split Squat (shift your body weight toward the front foot) (photo 2). From there you may stand up immediately. Alternatively, you first may drive your knee down and your hips forward to go up to the Tall Half-Kneeling position before you stand up (photo 3).

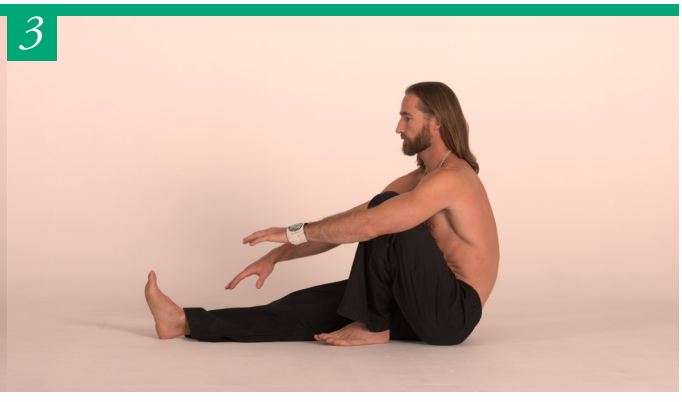
You also could pull the extended leg backward to a Tall Half-Kneeling stance as soon as you reach the Single-Leg Deep Squat without holding the Single Leg Deep Squat at all.

Variation 3: Squat on a Single Leg

You can lightly slide the front foot against the ground without supporting any significant body weight, or you can keep the foot off the ground entirely, though greater balance and joint stability is required when the foot is up. This variation requires definitely a phenomenal leg strength and knee joint stability.

Getting Down

1 From a Split Standing position, shift your weight back onto the rear foot. Either keep very little body weight on the front foot or raise the heel off the ground.



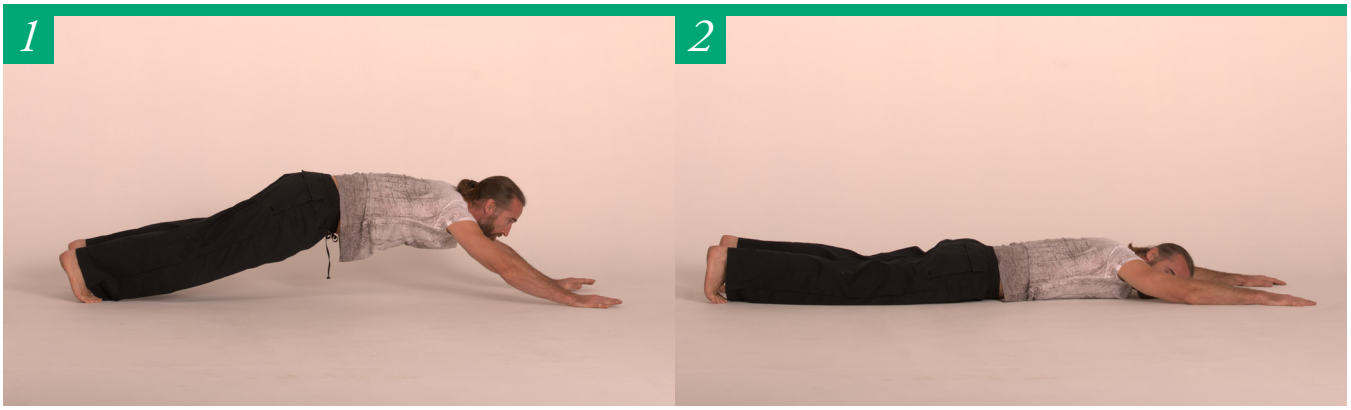
2 Lean forward and reach forward with both arms to maintain balance over your single point of support as you sit back and lower your center of gravity. If the heel of your front foot is resting lightly on the ground, allow it to slide forward as you shift your weight.

3 Control your descent until you reach the Single-Leg Deep Squat; then lower your seat to the ground in a Bent Long Sit.

TECHNIQUE TIP

Make sure to practice on both legs. If you perform the movement dynamically, make it dynamic on the way up but slow and controlled on the way down.

Slide Front Sprawl



1. Alternatively, you can slide forward by reaching with your hands a little beyond your head. In this movement, you slow down the movement through your shoulders, core strength, and your hips instead of pressing down on your arms.
2. Keep sliding and end in a Prone Lying position with your arms fully extended.

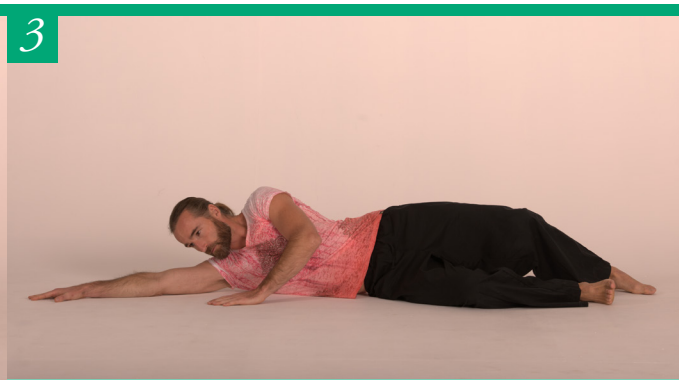
Alternatively, you can do the slide using only one arm. When you use one arm instead of two, you may flip to your side in a Side Lying position before even reaching the Prone Lying position, and potentially Side Roll to a Supine Lying position upon reaching the ground. Whichever method you choose, doing the Slide Front Sprawl on a rough surface can be tough on your hands.

Side Sprawl

The Side Sprawl is another directional option in sprawling. This movement is a one-handed sprawl, which potentially puts a lot of stress on the supporting arm, palm, wrist, elbow, and shoulder. This movement cannot be reversed to a get-up. It can be done in two different ways.

The first option is to do the Back Side Sprawl, which is done backward to the side. From standing, reach your extended arm to the side. Once your hand reaches the ground, shift your body weight onto the locked-out arm and immediately push off your feet to bring your legs off the ground and extend your body on its side. Finish the movement in a Side Lying position.

Alternatively, you can do the Sliding Side Sprawl which is done forward to the side.



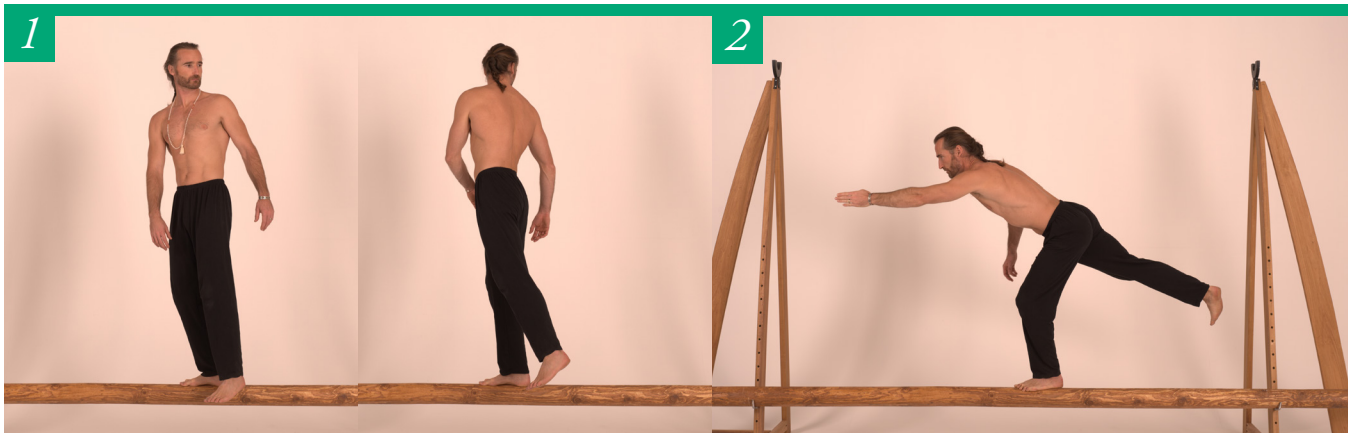
1. From a standing position, look to the side and lean sideways in that direction; immediately push off the foot opposite to the direction you are moving so you can put yourself off balance in the direction intend to sprawl. Reach out with the arm that's in the direction you are sprawling toward.
2. Make sure to extend your arm on the ground vertically beyond your head so you can enter a sliding motion immediately and to avoid landing heavily on your hand and arm, which could cause your wrist, elbow, or shoulder to be strained or injured. Preventively, bring the other arm around to the front of your body in case you lose balance and flip on your face in a Prone Lying position.
3. Allow the extended arm to slide out to disperse the impact of your fall. Place the palm of the other hand on the ground in front of your chest to assist maintaining balance in the side lying position.

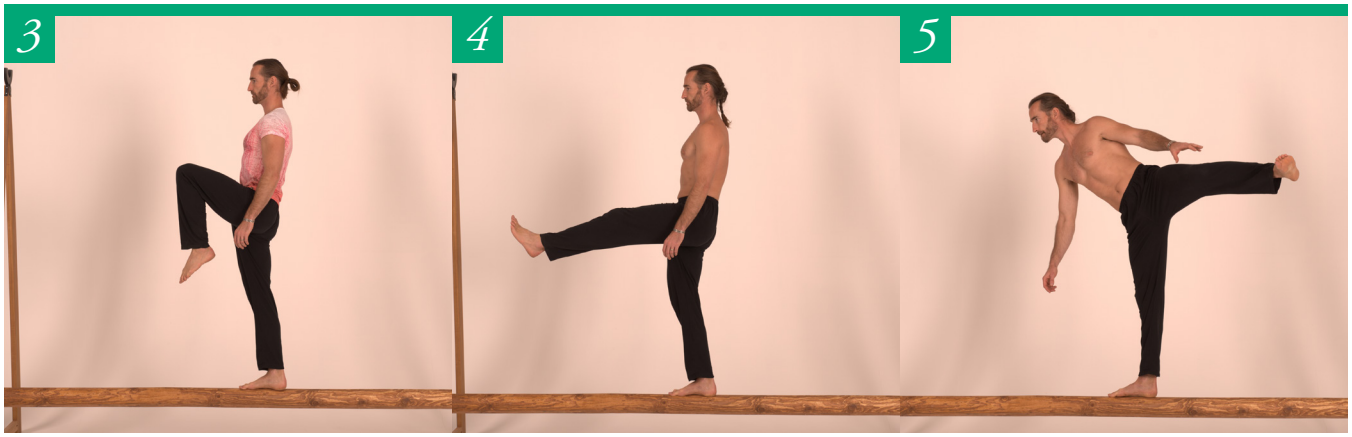
Removed from Chapter 26, Balancing Movement (i.e. from pages 268 - 301 in *The Practice of Natural Movement* book).

Addition to Single-Leg Balancing (i.e. from page 279 in *The Practice of Natural Movement* book).

Once you are comfortable in the neutral Single-Leg Balancing stance, practice variations and movements as you did with the Two-Footed Standing stance with the same practical purposes. You should practice slowly and dynamically.

1. Look forward, down, up, and sideways, then rotate your trunk in both directions.
2. Flex your support leg slightly and come back to a fully extended leg, then Hip Hinge and lean forward. Extend one or both arms.
3. Flex the free leg and tuck your knee up as if you want to step onto or into something.
4. Extend the free leg as if you want to push something away or support your foot on something.
5. Reach end range of motion and stability by elevating your legs as high as you can to the side and back.





When you have these positions under control, you can practice slow and fast transitions between each of them. You also can do dynamic single-leg movements such as

- Swinging your free leg to the front, to the side, and to the back with varying degrees of amplitude and speed.
- Swinging your free leg in forward or backward circles with varying degrees of amplitude and speed.

Next, train transitions from the neutral Single-Footed Balancing position to any of the positions mentioned earlier and back to the neutral Two-Footed Standing position. Do it slowly at first, then do it quickly or alternate slow and fast.

Forward Standing Balancing Walk

After you have practiced and mastered balancing backward, going forward will be quite easy. The exact same principles apply.

1. Assume the neutral Split Standing position, with your weight shifted onto your back foot. The ball of your front foot is in touch with the surface of the beam, heel up, foot and ankle aligned with the surface of support.
2. Shift all your body weight to the front foot, which comes flat on the beam, while the heel of your back foot comes off it.
3. Release your back foot and pull your back leg toward the front, maintaining stability from your feet to your head.
4. Place the ball of your foot on the surface with your ankle and heel horizontally aligned with the beam, ready to shift your weight to your front foot again.

Crouched Walk

You use the Crouched Walk when you are concerned about losing balance, in preparation for the possibility of having to quickly bring your hands to the supporting surface to avoid a fall. You can do it forward or backward. You also can use crouching to duck under something, like a branch. Sometimes, a low obstacle will be in your path and you must pass it by stepping over it or stepping out and forward.

In the Crouched Walk, your back is naturally rounded, and your upper body is leaning forward. The sequence and timing remain the same as in the other balancing walk movements.

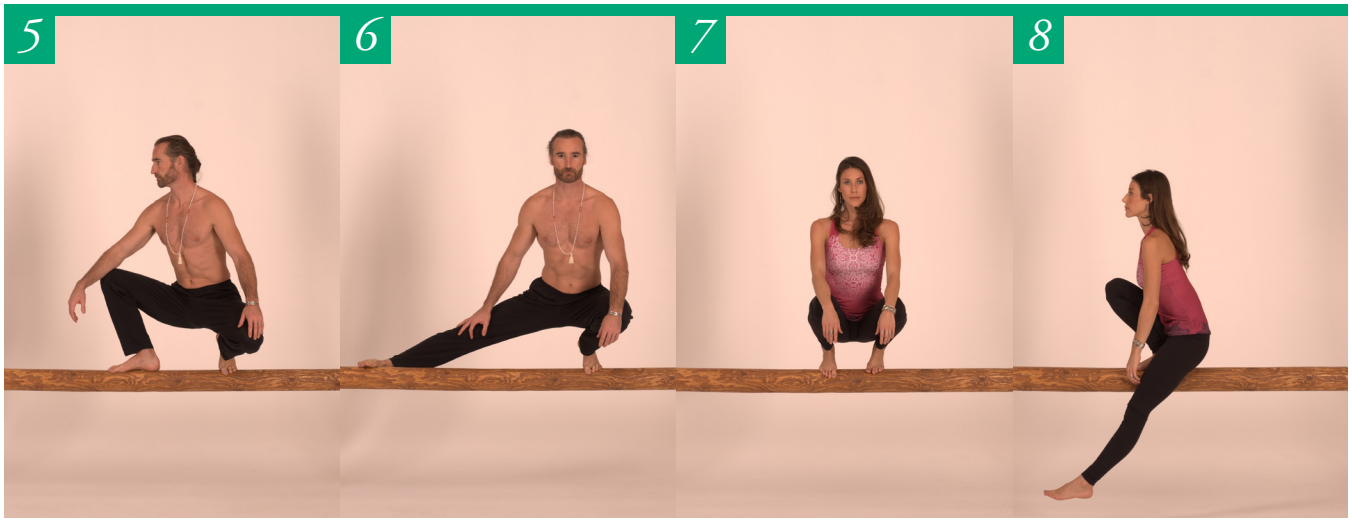
Balancing *on* Feet: Squatting

The varied Deep Split Squat and Deep Knee Bend positions are important for two reasons. First, they are essential positions either when Deep Split Squat Walking or Deep Knee Bend Side Shuffling, or when having to lower your center of gravity to stay balanced, observe from a lower standpoint, wait, or rest. Second, they are often transitional positions you hold briefly when stepping up into balancing from the ground or when stepping, jumping, sitting, or climbing down out of balancing. Later in this section you will find get-up techniques that involve the Deep Knee Bend and Deep Split Squat. If your mobility is challenged when you do similar positions on the ground, you will notice that these balancing positions challenge you more, and therefore help improve your joint stability more.

Practice each position, and when you feel comfortable enough, add head movement (looking in different directions), arm movement (reaching), or slight hip rotations. You also can lean forward or backward or shift your body weight from the front foot to back foot (and vice versa). Lastly, practice smooth transitions between these positions.

Deep Knee Bend Side Shuffle

1. Neutral-Base Deep Split Squat. Most of your body weight should be on your front foot, with your back foot assisting your balance. (You can go for a narrow base if necessary.) A Deep Split Squat is basically a hybrid position between a Deep Squat and a Deep Knee Bend, with one foot flat on the ground and the other on the ball of the foot.
2. Wide-Base Deep Split Squat with your body weight on your front foot.
3. Wide-base Deep Split Squat with your body weight on your back foot.
4. Wide-Base Deep Split Squat with your body weight on your back foot. Your front foot is gripping the beam from the side to assist balance.



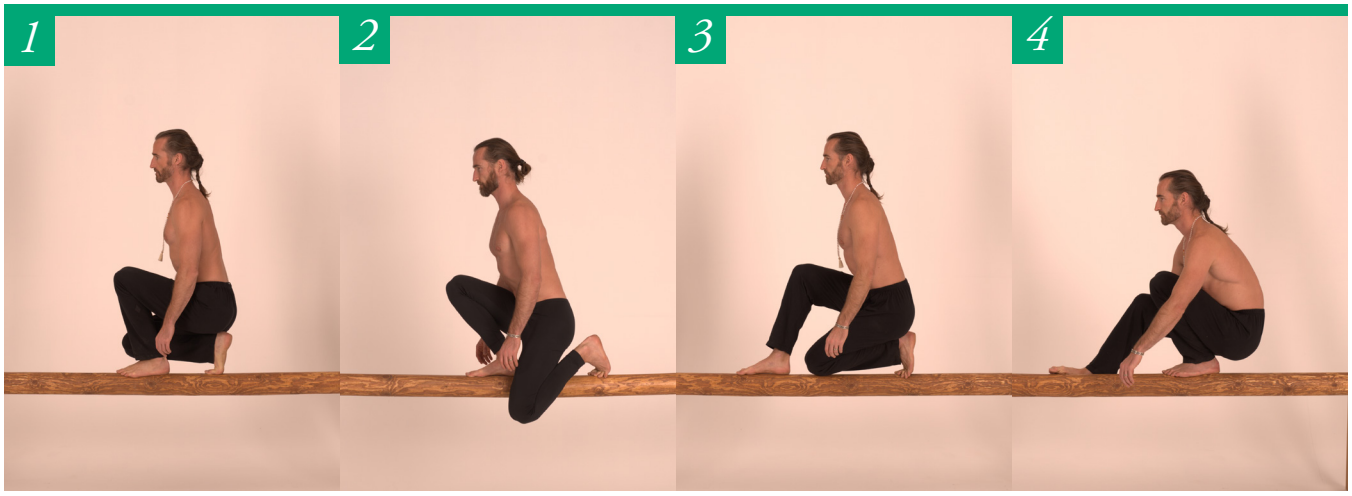
5 Neutral-Base Lateral/Open Deep Split Squat with your body weight on your back foot.

6 Wide-Base Deep Knee Bend with extended leg.

7 Deep Knee Bend.

8 Single-Footed Squat.

The Deep Knee Bend Side Shuffle is another fantastic balancing exercise. Though it is not as convenient or safe as the Deep Split Squat Walk, you can use it when you must keep looking straight ahead at something or when you anticipate stepping or jumping off the balancing surface in a forward direction. How far you step to the side depends on how comfortable you are with the movement or how much friction you get on the surface. If the surface is slippery, it is safer to take short steps. When practicing, start with small steps before progressively increasing the distance per step.



1 Assume a stable Deep Knee Bend side stance.

2 Shift your weight to the foot that's opposite the direction you're headed (the back foot) so you can extend your free leg sideways to the front. You may lift your foot slightly off the surface, or you can slide it if the surface is sufficiently smooth and even.

3 Once your front foot is on support, shift all your body weight to it so that you can pull your back leg forward.

4 Re-establish the Deep Knee Bend.

Foot and Hand Position Faults and Variations

Inefficiencies that were not addressed at the ground movement stage, such as an inability to align joints or to stabilize them and prevent positional sway, are glaringly magnified as you attempt to hold the same stances while balancing. Even if your positions on the ground were good, inefficiencies may reappear as you balance because the challenge is obviously greater. If you encounter too much trouble on the beam or board, just step down to the ground and assume the foot-hand position with all four points of support aligned with your midline as if you were balancing then get back to a balancing surface when you're your stability has improved.

1 Rounded back, elevated hips

2 Bent elbows

3 Collapsed hips

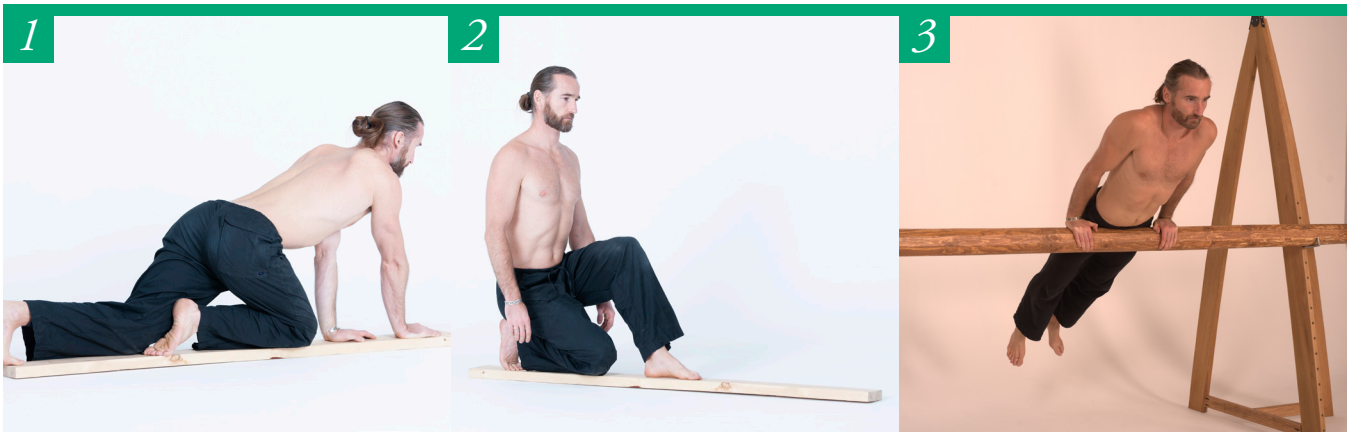
Once you can hold the basic positions with control, you can explore diverse movement variations—for instance, you could turn your head sideways or elevate a leg or arm to the side.

Balancing *on* Knees *and* Hands/Elbows

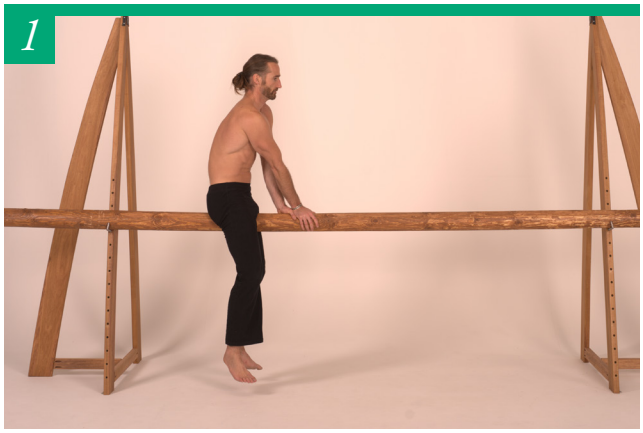
I will keep this section short for a reason: balancing on your knees is difficult, risky, and potentially dangerous, although that doesn't mean you should never train this way. These positions can be practical in some cases where they're the only option. For instance, the positions shown in photos 1 through 4 are solid, stable positions that can be used for rest, observation, communication, aiming, paddling—for example, when you're on the ledge of a wall or in a canoe.

There's a catch, though: The moment the surface becomes rounded or really narrow, you really want to avoid making your knee a point of support. Unlike the ball of your foot or your whole foot, which can use many muscles and joints, including the ankle, to adjust position for ensuring friction, the knee as a point of support gives you a very limited range of motion and options for adjustments, which reduces your overall ability to balance. Even worse is the fact that the knee joint is both hard and rounded with little cushioning. It provides a very limited and stiff surface of contact, with little sensitivity for getting input from the surface that supports it. A very small point of support that is hard and rounded is going to easily slide off a hard and rounded surface of support. Given that the knee may be holding a good percentage of your body weight, the risk is high that your knee will abruptly slide off the surface and make you lose balance entirely. I have seen countless falls when people attempt to use their knees when balancing—especially when they're trying to climb up, over, or down—by choosing these highly unreliable positions. People try to use their knees because of lack of mobility, technique, or both. Yet there are simple options that are easier, faster, safer, and, in a nutshell, more efficient and do not use the knee. The Tripod Transition is an example.

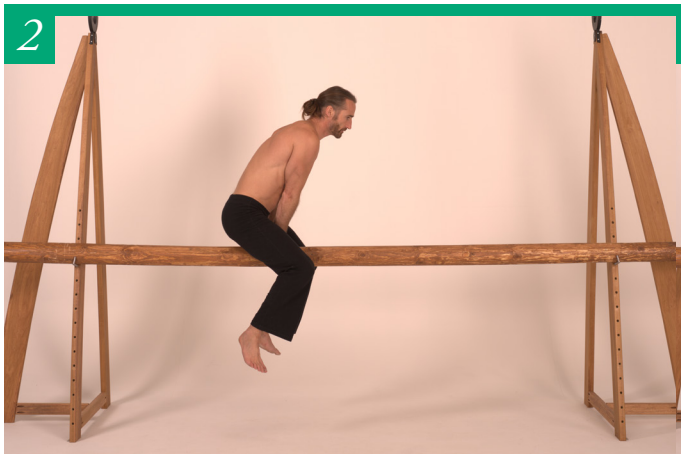
However, you can use your knees for balancing in effective ways, as long as the environment allows for doing it safely. So, it's really a matter of context and appropriate choice. I encourage you to practice these balancing stances, including on rounded surfaces and at a (limited) elevation, for skill training and experience, but I recommend against using them in real life when climbing up and down or when dealing with narrow, rounded surfaces unless you have no other choice.

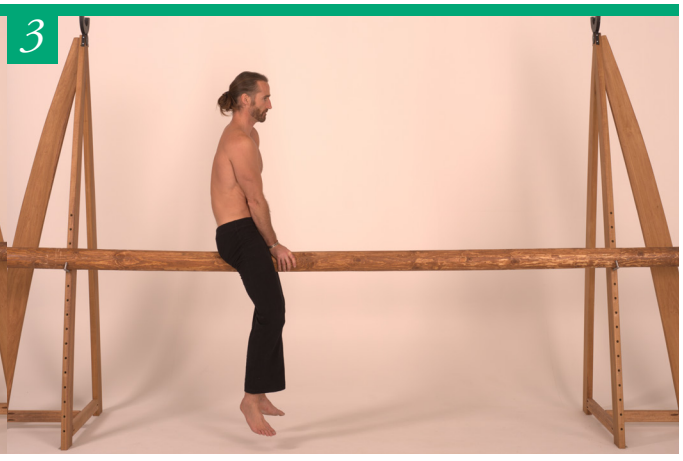


Front Straddle Sit Traverse



1 From the Straddle Sit, place both hands several inches in front of you, arms in the lockout position, so you're ready to shift your weight onto your hands.





2 Keep your hands and arms firm and lean forward to shift 100 percent of your body weight onto your hands as you slightly bend your legs, lift your rear, and drive your hips forward.

3 Drive your hips as far forward as you can until your groin reaches your hands. You are ready to resume from the start.

How far you move your hands before you shift your weight onto them depends on how stable or how strong you are. You can make the exercise harder by increasing the amplitude of your movement and the distance you reach between each sit position; however, 2 feet seems to be the greatest distance covered by one cycle.

Foot Hook Push-Pull Traverses

The following variations are a safer and faster way to traverse across a narrow surface than the Straddle Sit, if there is no obstacle on the way to prevent you from moving that way. The mechanics resemble the Push-Pull Crawl, with the main drive coming from pushing off the leg. This is very important to understand, as the efficiency of the technique relies upon the drive from that push. Your foot and leg are not there just to stabilize your body but to propel it while also stabilizing it.

Interestingly, all it takes to turn this movement into a climbing technique is for the surface to be inclined.

Split-Arms, Single-Foot Hook Push-Pull Traverse

Another variation is the split-arms position. In this case, you pull with your front hand and push from your back hand. It can be used in place of both arms pulling from the front if the surface doesn't provide enough friction and you need an alternative where you can rely more on your upper-body strength.

1. Assume the Single-Foot Hook Straddle Lying position with one arm extended in front of you. The other arm is bent with your hand at about chest level. Hook your rear foot as close to your rear as possible.
2. Start pushing off your hooked foot and rear hand, which lifts the weight off your belly and chest and elevates your upper body off the supporting surface. Still pushing off your hooked foot, start to drive your hips forward and pull with your front hand. Your head is moving closer to your front elbow.
3. Keep pushing off your foot and rear hand and pulling with your front hand until you reach a complete extension. At this point you can't push off your foot or back arm anymore or pull from your front arm, which is now fully bent. Your head is at about the same level as your front hand.
4. Slide your rear foot close to your rear again, bring your rear hand to chest level, and extend your front arm forward to the front, back to the initial position and ready for another forward cycle. Alternatively, you could switch legs.

Side Tripod Get-Up Advanced Tripod Get-Up Drill

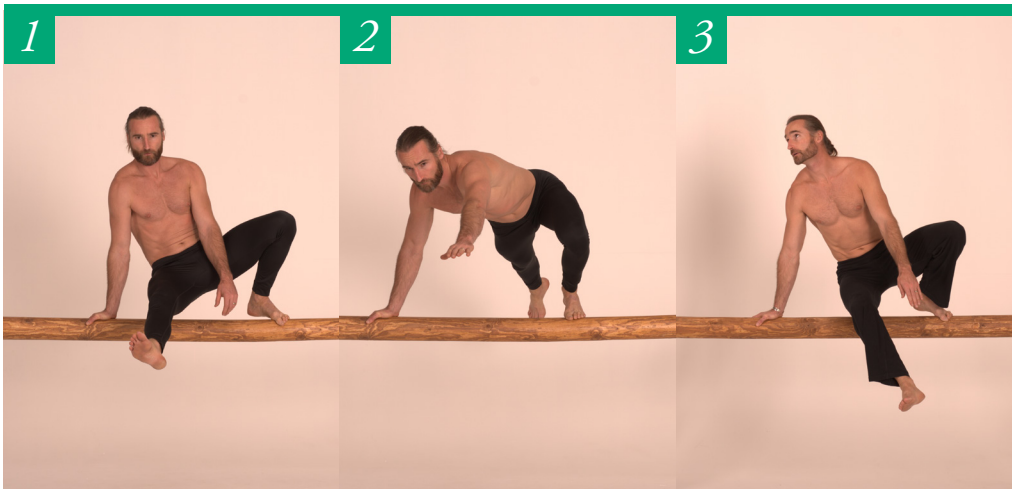
During the Tripod Get-Up, you are switching from three points of support to two and then back to three. Your goal is normally to spend as little time as possible in the less stable stance, which is the position with two points of support (with opposite foot and hand) and to keep your hip motion to only the range necessary and the distance travelled by the foot as short as possible.

This advanced practice drill involves a full forward and backward hip drive and leg extension to improve your joint mobility and stability in the Tripod Get-Up and make you very comfortable in that position and transition.

In fact, this movement has practical value for several reasons. First, you may encounter a moment of imbalance and use hip motion to counterbalance through your free leg. Second, if you are stepping or jumping down from the Tripod Get-Up you may use a swift and deeper hip motion and backward leg exten

swift and deeper hip motion and backward leg extension to help push yourself off and away from the supporting surface. Last, you might want to step or jump down—or step over and forward—and away from the supporting surface toward the front by driving your hips and leg forward before pushing off the surface. The drill trains you for these possibilities without requiring that you get off the bar and climb back up, so you can spend more time on the key position and pattern.

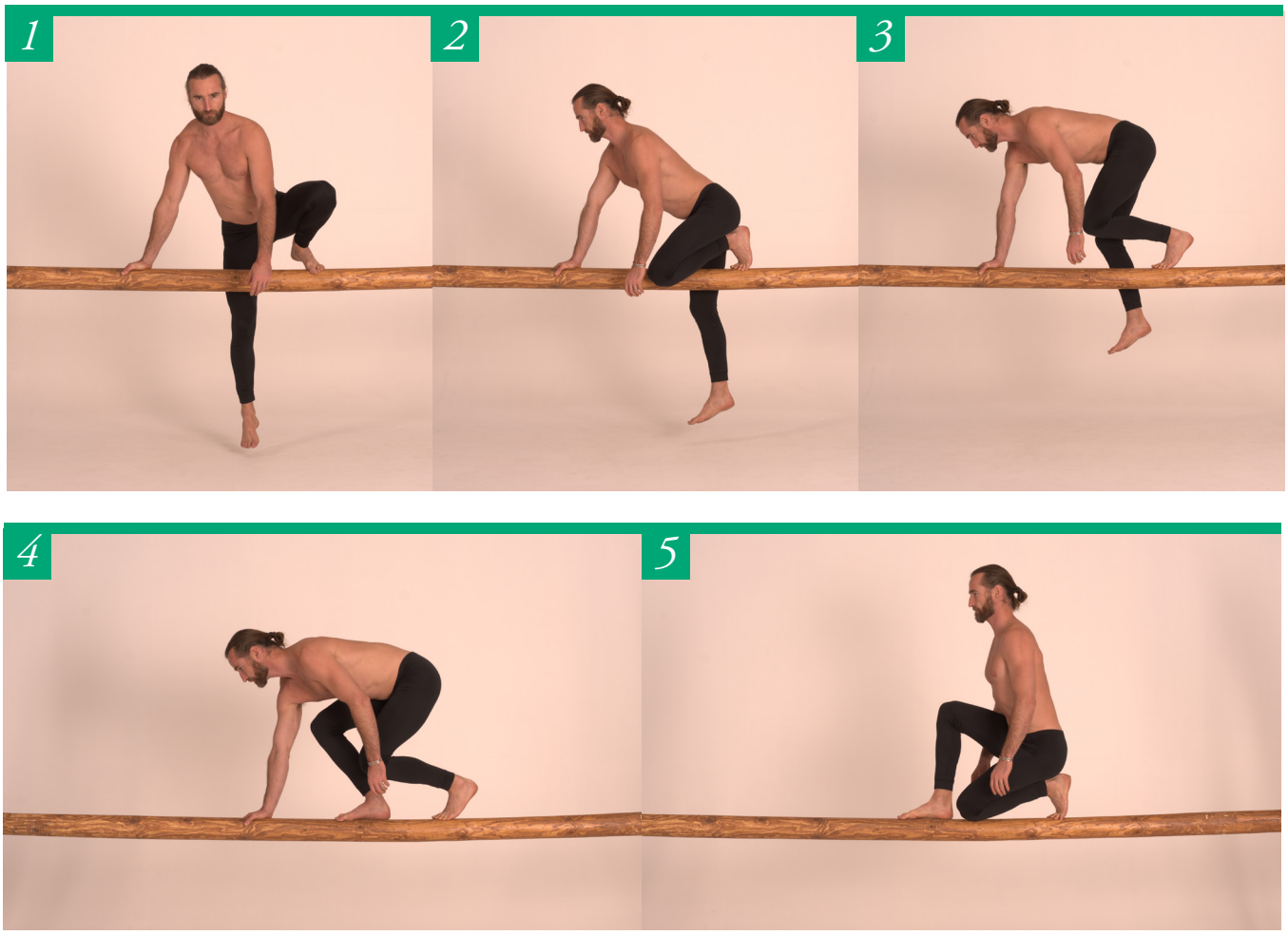
First assume an elevated Side Opposite Single-Foot, Single-Hand position from where you would normally quickly place the inside foot onto the bar. Then do the following:



1. Pass the leg through your base of support, extending it to the front by driving your hips forward. Try to reach as far as is sustainable with your foot.
2. Pull your leg backward to extend it as far as you can to the back, driving your hips back to the maximum and extending your free arm to the front for counterbalancing, if needed.
3. From either position, primarily use hip motion to pull your leg forward or backward through your base of support repeatedly in both a slow and dynamic fashion; then switch sides.
4. Optionally, you can increase the difficulty of the drill by looking around, turning your head in varied directions, or even by closing your eyes while you continuously extend your leg back and forth.

Front Tripod Get-Up: Vertical Hand Press to Deep Split Squat

This is a variation of the Tripod Get-Up with a pivoting reorientation of the body on the bar as you move your body from a side position with the body's orientation perpendicular to the surface of support to a front position with the body's orientation parallel to it. As a result, you end up in a Deep Split Squat instead of a Deep Knee Bend. Use this variation if you prefer to get directly in a Deep Split Squat position to move forward, stand and move forward, or even stay low in a Foot-Hand Crawl stance and move forward (or backward). The advantage of this variation is that you can use two hands for support from start to finish, which makes the position steadier and safer.



1. From the Vertical Hand Press stance, establish the Side Opposite, Single-Foot, Single-Hand Vertical position. Your supporting hand is ideally pointing outward, so you don't have to rotate it while you pivot off your foot in the next phase of the sequence.
2. Pivoting steadily on the ball of the foot, rotate your supporting leg internally to orient yourself at a 90-degree angle in the Front Opposite Single-Foot, Single-Hand Vertical position. Your center of gravity stays level during this motion.
3. Push off the supporting foot to elevate your waist and pull your leg upward.
4. Upon elevating your waist high enough, finish pulling your foot up and position the ball of the foot at middle distance between your supporting foot and hand, perfectly aligned with the bar, then immediately lower your heel so your whole foot comes flat; shift your body weight to that foot.
5. Push off your hand and then your front foot, shift your weight backward, and lower your center of gravity in a balanced Deep Split Squat position, keeping your arms relaxed. You also could decide to stand up directly or Foot-Hand Crawl.

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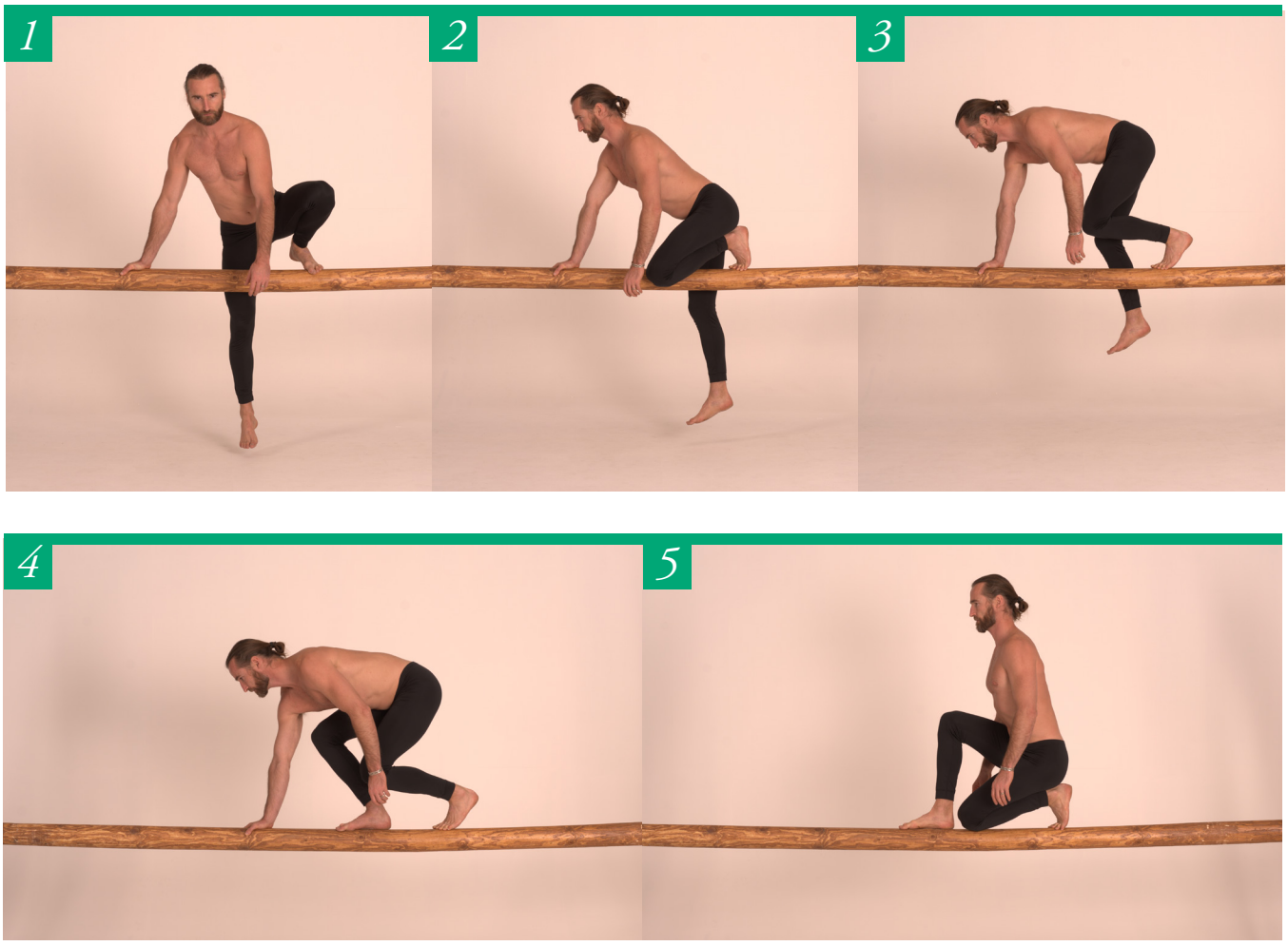

1 From the Vertical Hand Press stance, establish the Side Opposite, Single-Foot, Single-Hand Vertical position. Your supporting hand is ideally pointing outward, so you don't have to rotate it while you pivot off your foot in the next phase of the sequence.

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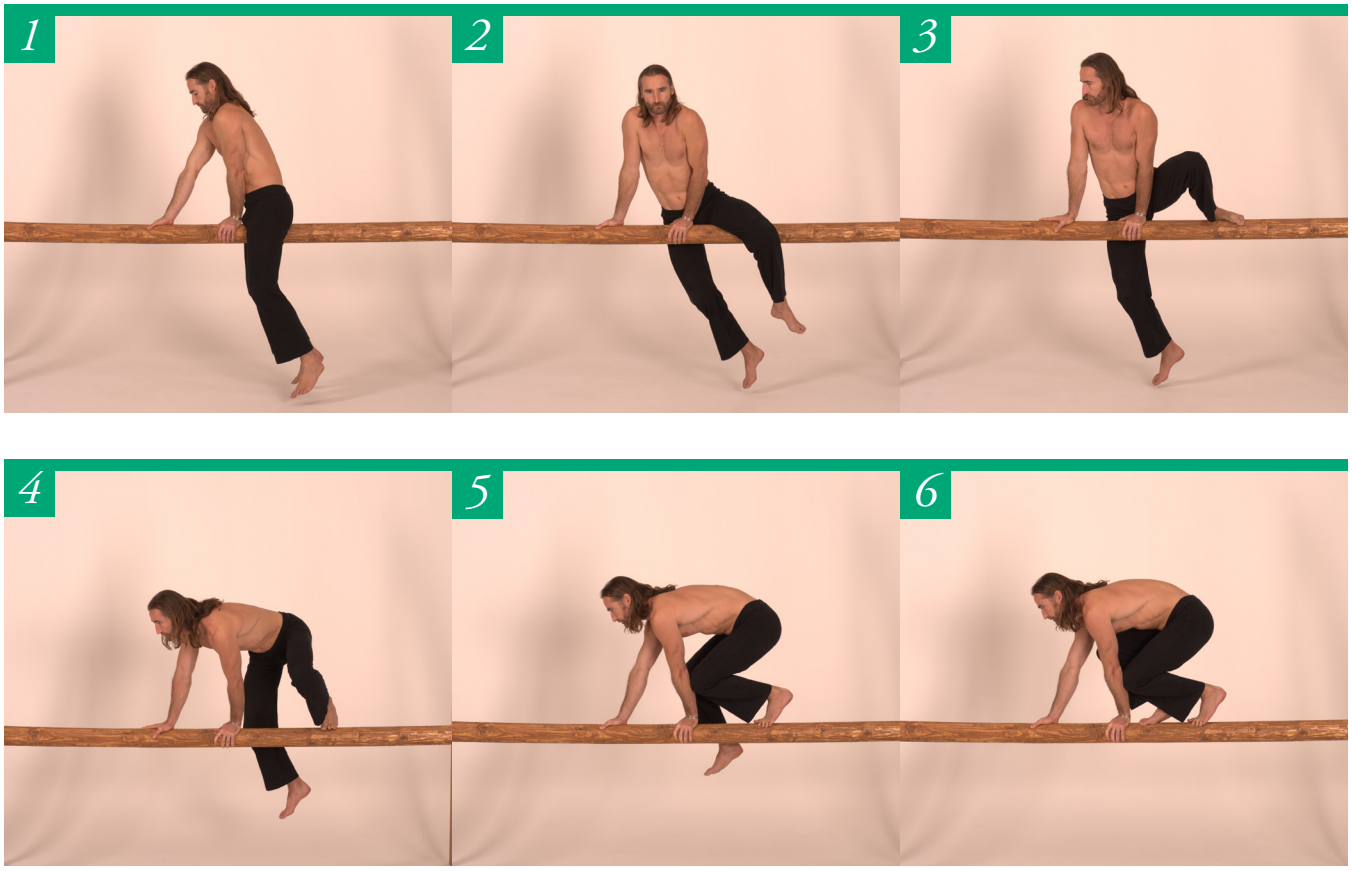
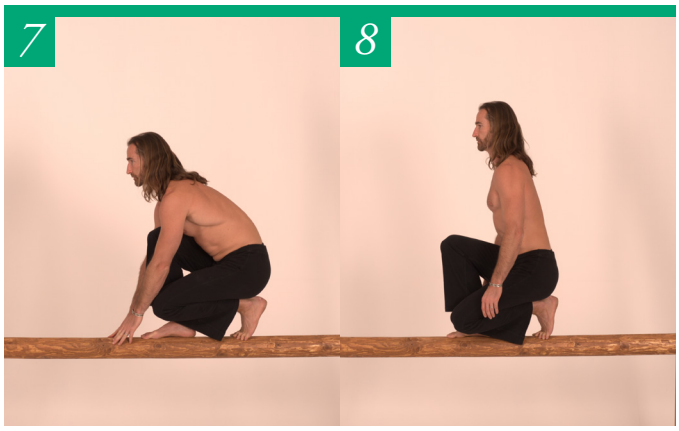
5 Push off your hand and then your front foot, shift your weight backward, and lower your center of gravity in a balanced Deep Split Squat position, keeping your arms relaxed. You also could decide to stand up directly or Foot-Hand Crawl.

Front Tripod Get-Up from Straddle Sit

This variation starts from a Straddle Sit instead of a Vertical Hand Press. It enables you to transition to a Deep Split Squat. You might choose this variation because it allows you to use two hands and arms for support from start to finish, which makes for a steadier and safer transition. However, you may conveniently turn it to a Side Tripod Get-Up and transition to a Deep Knee Bend.



1. Assume a Straddle Sit, leaning forward with your hands in a split stance on the bar and your arms in the lockout.
2. Shift your weight to your hands to reduce weight and friction on your rear, which allows you to rotate your hips to a Straddle Sit at an angle.
3. Pull your foot up until you can place the ball of it on the top surface of the bar, ready to push off that foot. You have already turned your head to the front. Optionally, from this position you could go for a Side Tripod Get-Up and transition to a Deep Knee Bend.
4. Push off your back foot as you also move your knee inwardly, elevating your waist while maintaining a strong position.
5. Pivot firmly on the ball of the foot and finish internally rotating your supporting leg to reposition your hips and body to face forward as you keep pulling your foot up.
6. Because you are using two hands for support, you must place your free foot immediately behind your back hand and in front of your back foot, which forces you to keep your heel up and prevents you from positioning your foot flat.

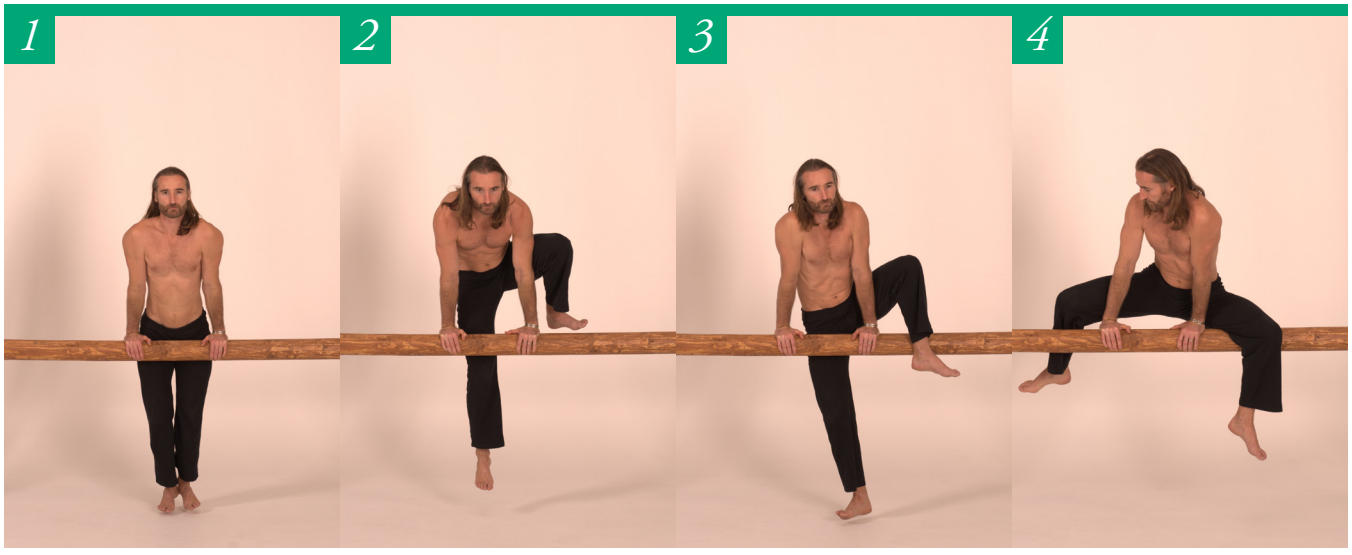


7 Push off your hands and lower your center of gravity in a Deep Split Squat while still leaning forward. The heel of your front foot comes down to a flat-foot position. Keep your hands ready to assist your balance if necessary.

8 Once you feel strong on your feet, you can fully release your hands, make your posture straight, and bring your upper body close to vertical in the Deep Split Squat, with your arms relaxed on the sides of your body.

Vertical Press to Front Straddle Sit

This move is useful if you are entering balancing in a Vertical Hand Press position—after a climbing technique, for instance—and want to first establish yourself in a more stable and reliable sit position. Conversely, it enables you to exit balancing by switching from a sit position to the Vertical Hand Press before you climb down.



1 Hold the neutral Vertical Hand Press position.

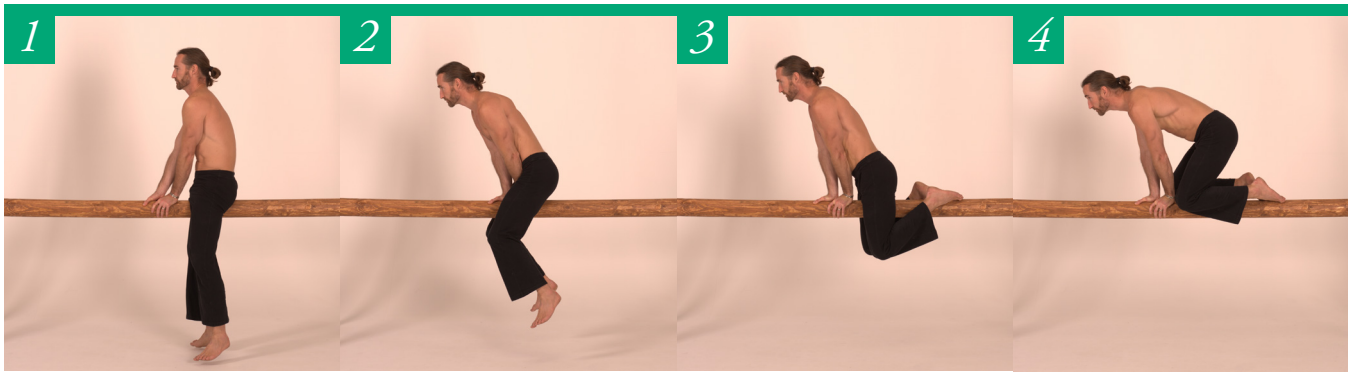
2 Push off your arms, elevate your hips, and pull one leg up to the side.

3 Pass your foot and leg over and down on the other side of the bar.

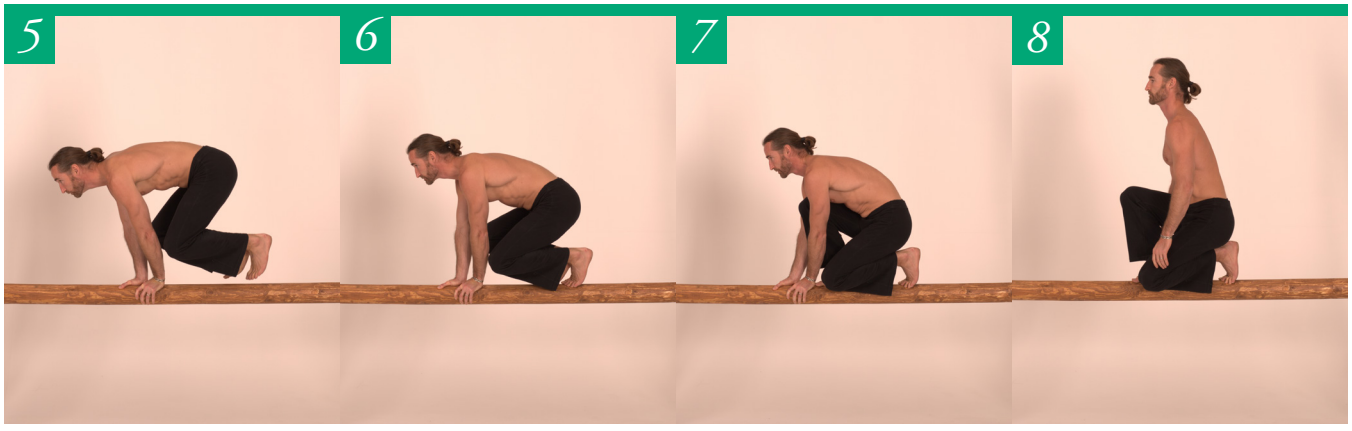
4 Continue pushing off your arms but shift more body weight on the hand next to the hooked leg and bring the back of the thigh of the hooked leg down on the support while you lift your trail leg. Start rotating your hips toward a Front Straddle Sit position. Let your front hand (the one closer to your final direction) pivot in a more comfortable position.

Double-Foot Hook Get-Up

This is a more dynamic version of the transition I just showed you, but it involves two hooked feet and a "vault" phase where you find yourself supported by only your hands as the rest of your body is airborne for a moment. Interestingly, the exact same pattern can be used on the ground as a get-up variation.



1. Establish the Straddle Sit stance with both hands firmly positioned in front of your body and your arms in the lockout position.
2. Lean forward, shifting 100 percent of your body weight to your hands and pushing off your hands to elevate your rear 3 to 4 inches off the bar. Start to pull your legs swiftly back and up in one motion.
3. Lean forward to facilitate pulling your feet all the way to bar level.
4. Hook your feet on the top surface of the bar. You can't look at them and must feel that they are correctly positioned across the bar to provide the friction you need to pull from them. Start pulling off your feet to begin elevating your waist above the bar.



5. Swiftly pull from your hooked feet to vault and throw your legs and body a few inches into the air, but not higher than necessary for you to switch from plantar flexion to dorsiflexion.
6. Because your feet quickly revert to dorsiflexion while in the air, they land on the balls, level on the bar. Optionally, you could split your feet while they're airborne to assume the Hand-Assisted Deep Split Squat position (as in the next photo).
7. Pull the foot that is on the same side of your front hand to the front just behind the front hand in a Hand-Assisted Deep Split Squat.
8. Push off your hands and front foot to regain a vertical posture and stable Split Squat with your arms relaxed.

Deep Knee Bend

1 Stand in a side fashion on the balls of your feet, mindfully maintaining stability from feet to head.

2 Flex your legs and lower your center of gravity, putting a lot of focus on your feet and ankle stability and letting your center of gravity follow a vertical path with very little forward or backward motion. Make balance adjustments through your hips.

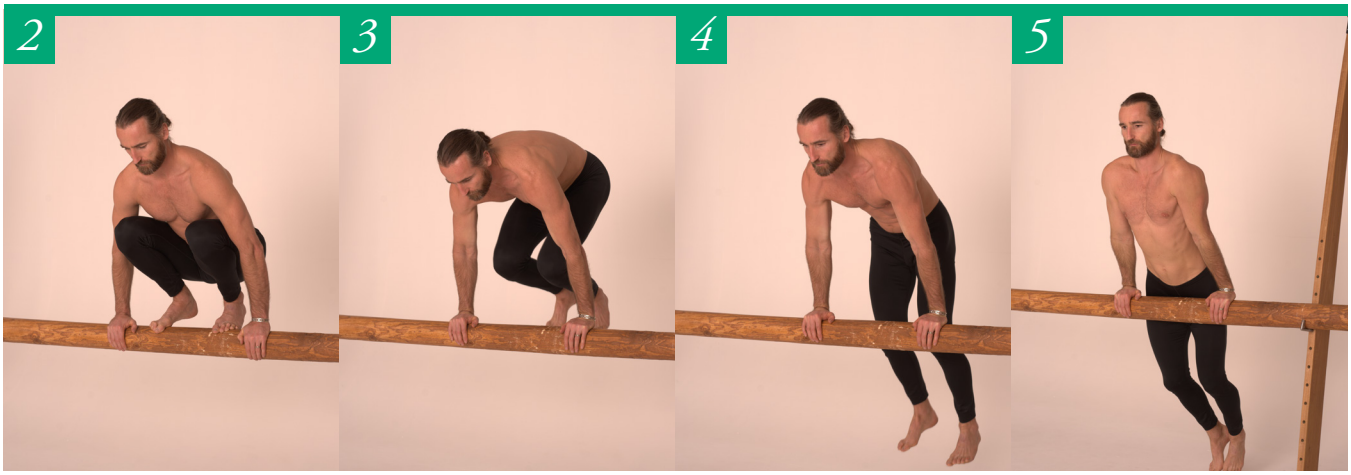
3 Stabilize in a Deep Knee Bend.

4 Optionally, turn your head from side to side as if you need to scout your surroundings, which challenges your vestibular and visual systems even more. You can move your head while you're standing and in the Deep Knee Bend (or Deep Split Squat) positions, or while you're getting up and down.

Deep Knee Bend to Vertical Hand Press

Finally, let's look at very dynamic ways to get down from a Side Deep Knee Bend stance. Like the Double-Foot Hook Get-Up, this movement has a vault phase with the body very briefly supported only by the hands while the rest of the body is airborne. You can use this movement intentionally to get down—in which case it can even start from a standing position—but you also can use it to avoid a fall if you are unexpectedly put off balance backward while in the Deep Knee Bend. You can initiate a similar movement from standing, which requires that you bend down and reach the surface of support with the hands, but you may choose to not fully lower your body to a Deep Knee Bend before your feet get off the surface. The reverse sequence to get up exists as a vault technique called the "Pop-Up Vault," and it's covered in the Climbing section.

1 Hold the Deep Knee Bend position.



2 Slightly lean forward and place both hands on the surface of the bar.

3 Quickly shift your weight to your hands and push both feet back and off the bar simultaneously.

4 Pulled by gravity, your whole body extends downward as you control the speed of your descent, preparing your arms and body position for "landing" in the Vertical Hand Press.

5 Stop your downward descent by decelerating and stopping your body through your locked-out arms, slightly leaning forward and resting your groin area against the bar.

Losing Balance *and* Falling

Despite consistent skill training and mindfulness in movement, no one is ever unfailing. Whereas physical action may mostly be effective even if it's inefficient, sometimes physical action is not even effective. Your training is not an absolute guarantee against ineffectiveness. Aside from the unfortunate loss of consciousness, losing balance may happen because you get distracted or panic, because the supporting surface is unpredictable and causes slippage, or because you are pushed by strong winds. You often can recover when you get slightly off balance—for instance, counterbalancing by promptly lowering your center of gravity or by using some of the vertical transition techniques I previously discussed.

Fall Recovery: Standing to Hanging

The transition from standing to hanging can be quite intimidating, so it is important to practice it slowly at first and with safety measures, such as doing it from a low elevation, having a spotter, or putting a crash pad underneath the bar. You should do it slowly because, if your movement is not accurate or strong enough, you might literally fall if you're going too fast.

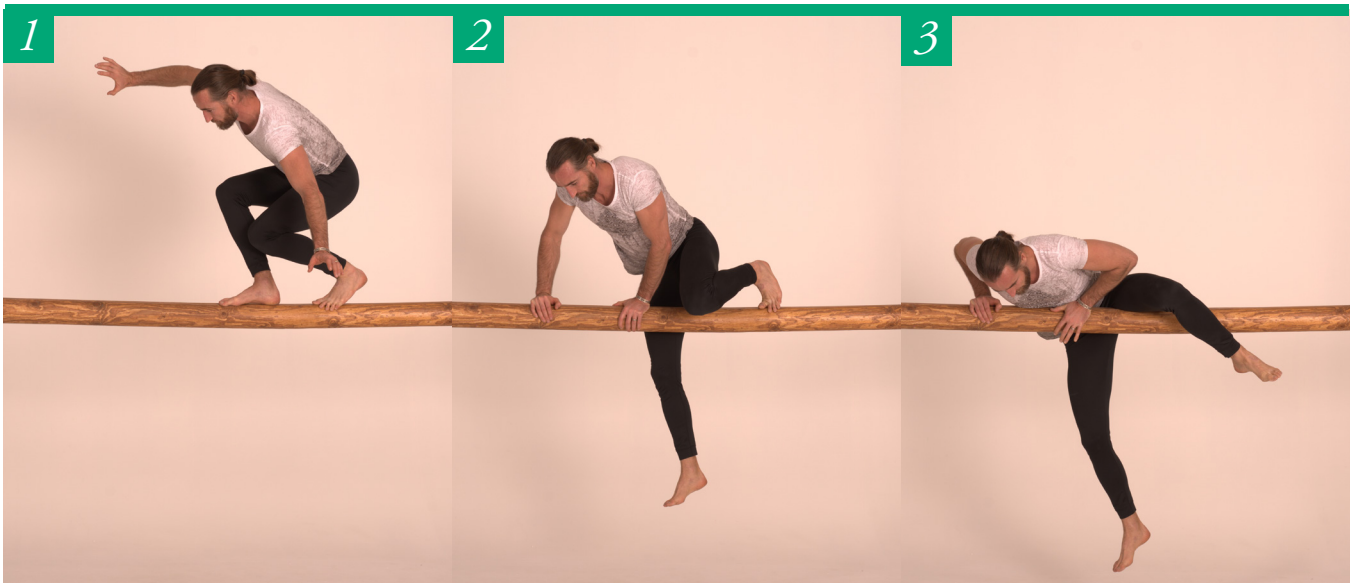
This transition is for people who are in good shape and who have already trained in the basic climbing hangs that I explain in Chapter 32. You must warm up well before attempting such moves. Also, whereas a thick support surface makes balancing easier, it becomes a more challenging surface for transitioning to hanging. You're better off starting practice of this technique on a rather narrow surface, but keep in mind that the narrower the surface, the more painful it can become to land in a hanging stance.

TECHNIQUE TIP

At first, practice each phase of the movement separately. In a real-world situation, you won't necessarily need to go through the entire sequence. Obviously, when possible, it's better to stop the fall in any of the positions before the last position, as you will have to build your position back up anyway, so the higher you stop the fall, the easier it is to get back up.

Advanced practitioners should be able to perform the whole movement swiftly yet smoothly and securely, without hesitation.

Variations *on* Balancing



1 Make yourself intentionally off balance. Your first reaction is probably to try to use your arms for counterbalancing while you swiftly lower your center of gravity to a Deep Split Squat, but that's not possible when things are moving too fast and your balance is off. You can only lower your center of gravity to a Half Split Squat. In the photo, I'm leaning sideways too much and at risk of falling off and down.

2 When you know you won't recover, let go of your front foot toward the outside, so that you can keep one foot on each side of the bar. Your leg goes downward as you rapidly lean down and extend your arms toward the bar and place both hands on it.

3 If the pull of gravity is too strong, it forces you to press down on your arms. Simultaneously extend and hook your back leg over the bar to create a point of support in a Side Straddle Sit.

4 If you're still being pulled backward and down and have failed to maintain a Side Straddle Sit position on top of the bar, you are forced to swing down underneath the bar. You must strongly rely on pulling on your hooked leg to support most of your body weight. As you slide to the side of the bar and down, quickly hook your inside arm over the bar, and forcefully bend your outside arm to accelerate and help counter the downward pull. This is an ipsilateral Single-Leg and Single-Arm Hook Hang position.

5 If your body is strongly swinging toward the other side of the bar, it may destabilize you and weaken your hang, which puts you at risk. To secure your position, quickly let go of your outside arm and pull it underneath and across the bar. Also pull your free leg toward the bar.

6 Hook your free arm and leg to secure a very strong and reliable Double-Arm and Leg Hook Hang until your position regains stillness.

Removed from Chapter 27, Gait Movement (i.e. from pages 302 - 339 in *The Practice of Natural Movement* book).

Stepping Up with Body-Weight Shifting and Arm Swing

Before I go over stepping down, here is a method for assisting stepping up when you don't have walking momentum, which is especially relevant if the lead foot is on a high surface and, of course, your arms are free to move. When the front foot is significantly high, stepping up is much more difficult than taking a more moderate step, and the movement more closely resembles a single-leg squat than a regular walking step. The first part of the method involves shifting body weight to the back foot and then swiftly shifting it to the front foot, which helps load the supporting leg with elastic energy and generates forward momentum that is then transferred to upward momentum. The second part of the method is like the arm swing in jumping (see Chapter 31, "Airborne Movement"), with the segmental momentum in the arms being transferred to whole-body momentum. The arm swing can help offset some of the effort in the leg or just add the little extra momentum needed to effectively get to the top. You may compare this method with stepping up straight with all your body weight on the supporting foot and without arm motion (arms down to your sides or crossed on your chest).

1. Once in position to step up, bring both arms back.
2. Initiate a forward and upward arm swing and immediately start pushing off your rear leg to step up; then bring your arms to your sides and finish standing.

Sprinting

When you hear "run for your life," you might need to sprint rather than jog for miles and miles. Young children train this ability unconsciously with short (30 to 100 feet or 10 to 30 meters), frequent bursts of fast running.

The ability to run fast for a short distance to some extent supports the ability to run slow for a long distance, whereas the reverse isn't true. Most people can learn efficient running mechanics at a slower speed over longer distance, but learning efficient mechanics for sprinting short distances requires a lot of practice. On the other hand, the benefit of training sprints is that the explosiveness gained and the ability to sustain the high-intensity effort developed by sprinting often carries over to many other movements. As a matter of fact, next to technique, conditioning (or fatigue) is the second most limiting factor in your ability to run fast repeatedly. Beyond the improvement of your running technique, training sprint intervals has tremendous positive effects on your health.

The Natural Movement version of sprinting is, of course, not exactly the same as sprinting in the Olympics once you factor in a variety of real-world contextual demands. You want to be ready to sprint starting from basically any position, with whatever footwear you're wearing (or none), on any kind of surface, in

cluding those that are uneven, muddy, icy, or rocky. When you run on unpredictable terrain, it becomes much easier to get destabilized, stumble, fall heavily, and hurt yourself than when you're sprinting on a track. If you sprint barefoot and the terrain is rough, you also can hurt your feet because you're going too fast to ensure the safety of each of your steps as you normally would.

Significant speed increases the impact when your foot lands, so maintaining whole-body alignment, breath, and positional control becomes much more challenging, and you need greater core strength to maintain a neutral spine. Sprinting is a high-level challenge to technical, power, metabolic conditioning, and willpower.

Practicing sprinting supports the physiological adaptations required for improving, but several other natural movements also condition your body to handle sprinting better, including foot-hand crawling, lifting heavy and fast, or jumping and landing. The conditioning benefits of such movements isn't related only to leg power; muscle elasticity, coordination, relaxation, metabolic conditioning, and breath power are also improved by practicing these other movements. For instance, balancing, jumping, and landing practice can strengthen the entire structure of your feet (muscles, tendons, ligaments, joints, bones, and connective tissues) so they can sustain the physical demands of landing on the balls of your feet at a high speed. The same movements can strengthen your calves, so you can push harder off the forefoot. Heavy lifting and carrying can strengthen your neck, which helps you maintain a stable head and shoulders, so you can better use your arms when running at high speed.

Despite the physiological adaptations necessary to handle the much greater intensity, from a technical standpoint sprinting is not an entirely new running pattern. You use the same neutral form, but you adapt it to high speed. In the following sections, I explain what you need to modify to attain significantly greater speed without changing much to your form.

Increase Whole-Body Lean Angle and Cadence

The primary modification to the neutral form is that the whole-body forward-lean angle needs to be more pronounced to enable the pull of gravity to accelerate whole-body momentum to the greatest speed you can sustain. If you're endowed with legs that are proportionally longer compared to your torso, which means your center of gravity is elevated proportionally higher from your feet or base of support, the pull of gravity accelerates your center of gravity forward faster, and you have a biomechanical advantage in running. Nonetheless, regardless of your physical makeup and proportions, you can reach your individual optimum running speed potential regardless of how high your center of gravity is in relation to your feet as long as your whole-body forward lean (or torso angle) is increased. The whole-body forward lean is the primary predictor of maximum running speed. With a modification as simple (but not easy) as increasing the angle of the forward lean by just a few degrees, gravity pulls you and accelerates your horizontal displacement.

To maintain this greater and faster forward pull, you must immediately increase your cadence, which is challenging for people who are already hard-pressed to maintain a cadence of 180 steps per minute. If your cadence is 180 steps per minute at a relatively fast speed, it should go up to well more than 200 steps per minute.

Again, you also are hard-pressed to make wider strides while maintaining a high cadence, and, in truth, making wider strides slows you down for several reasons (such as spending more time in the air, lead foot landing ahead of your center of gravity, heel striking, dissipation of elastic energy). Generate a greater whole-body lean and maintain a very high cadence, and stride length will take care of itself as a byproduct.

Circular Feet Path

To maintain both a high cadence and balance while maintaining a greater forward lean, the movement of your legs must reach greater amplitude. When you look at the path your feet follow at slow or medium speed, it's rather elliptical, but at high speed it becomes more circular.

Your hamstrings are more important in sprinting than your quadriceps. Your hamstrings pull your heels much faster and higher towards your rear (but they should never go higher than crotch level and never actually touching your rear), which then drives the knee forward faster and higher (but never higher than crotch level, with your thigh horizontal when

your knee reaches its highest point) and assists the pelvic area in pulling the legs forward very quickly. This is a principle similar to when you're kicking your rear with your heels after launching a Power Jump, so your knees can be powerfully driven up to the front of your body, allowing your lower leg to extend forward for landing.

Needless to say, a more circular path of your feet doesn't equate to striding out and lengthening your strides; it's actually what prevents striding out as you limit knee extension to prevent the lower leg from extending and reaching forward ahead of a vertical line with the knee. Keep short strides but make your feet follow a compact, circular path that enables you to sustain the same high cadence while leaning at a greater forward angle.

You also want to flex your ankle and pull your toes up as you drive the back leg toward the front.

Brush the Ground

You want to minimize the time your foot is in contact with the ground while optimizing the ground contact of your foot. After the forefoot lands, your heel still lowers all the way to touch the ground, but it rebounds at such a high speed that it feels like your heel isn't actually touching the ground.

Similarly your forefoot bounces off the ground extremely fast (as if you're running on hot lava), and the total duration of the ground contact is so brief—about one-tenth of a second—that it gives you the feeling that you are "brushing the ground."

This "brushing the ground" feeling doesn't stem from attempting to step light but from your efforts to ensure that you generate high levels of ground reaction force. The high-intensity plyometric response and elasticity in the feet results in the feeling of lightness in the feet. By applying greater support forces to the ground, you increase plyometric forces and the speed of your rebound, which accelerates the repositioning of your legs toward the next step and makes you run faster.

Conversely, a feeling of relative heaviness in your feet might not be the sole outcome of increased body weight as your feet land and greater ground force reaction generated through the feet. Instead, that perception of heaviness might be because of a lack of plyometric power in your feet, which increases the sensation of impact and weight as well as the time your foot spends on the ground.

Pump Your Arms

Swinging your arms is especially important, both as you need to initiate and build momentum as you're starting and as the pumping motion matches and counterbalances the rhythmic motion and effort of your legs upon reaching maximum speed. This linear, forward-and-backward contralateral arm movement supports positional control, balance, relaxation, and dispersion of energy by preventing sideways or rotational motions of the torso. In that sense, the arms aren't less important in terms of additional force production than they are because they enable maximum force production of your legs and hips by stabilizing your whole body and preventing trunk rotation.

The fact that the arms simultaneously swing in opposite directions cancels out the potential to produce additional horizontal momentum. It's the upward motion of the arm contralateral to the landing leg that participates in maximizing ground reaction force onto the support foot and leg and the overall vertical propulsive forces that is applied to the ground upon landing. This is the reason having strong shoulders and neck can help you accelerate and reach top speed faster.

As when you run at other speeds, your elbows are flexed at a right angle (approximately a 90-degree angle or L shape); the difference is how far your arms swing back and forth. Your hand reaches chin level in the front and your elbow reaches as far as possible to the back (without being forced). Your back arm can extend a bit, so the forward flexion of the forearm helps drive the arm forward faster. In any case, even when your arms swing faster, you must keep them as relaxed as possible, without shrugging your shoulders. Don't overdo arm movement. Your hands also should stay open and relaxed (of course not fully relaxed, just unclenched) with the fingers slightly curled. The muscles of the neck, shoulders, and back contribute to efficient arm motion.

Will Power

Reaching and maintaining top speed repeatedly demands great will power. You want to train your body to accelerate and maintain maximum velocity. Since maintaining top velocity is so challenging, it should feel that your intention is to constantly try to accelerate even when you have reached your top velocity. To ensure this, you don't want to run for distances longer than the maximum distance at which you can sustain your greatest speed. If your speed tends to decrease after 30 meters, sprint for 25 meters to ensure that you're always at full speed.

Maybe the variable that matters isn't distance but rather time. Say you can't measure the distance you can sprint, but you know that can sprint at maximum speed for a given time—such as 20 seconds. In that case, focus on duration, not distance. If you can't measure, or don't want to measure, distance or time, just do it by feel.

Breathe

Keeping your neck and line of vision straight helps you maintain consistent breath. Improving breathing power supports faster sprinting and faster recovery after or in between sprints. When you sprint, find a breathing rhythm that matches your stride rhythm.

Keep It Together

Add movement, not movements. Adding intensity and amplitude of your range of motion, or "movement," to the neutral form is what you must do to sprint; you don't want to add superfluous movements. Any additional motions that are unnecessary and unproductive at lower speeds are even more unnecessary and unproductive at higher speed. The rotation of the arms and torso is one of those unnecessary disturbances. Once your stride and arm swing are established, conserve energy by avoiding any positional or pattern modification or superfluous tension. Just stay consistent and as relaxed as you can, including keeping your jaw and face relaxed.

The onset of fatigue is much faster when you sprint than when you run at slower speeds. Fatigue alters technique (position, sequence, timing, cadence, relaxation, breathing, and running adaptability to changing environments) and uncovers new inefficiencies, which in turn creates new tensions that fatigue you more and alter your technique more. Because sprinting relies tremendously on technique, you don't have to systematically sprint maximally to become a faster sprinter—far from it. Submaximal speed enables you to perfect your technique better than maximal speed for two reasons:

- You can better feel and control your technique.
- It delays the onset of fatigue, which is the number-one reason for the alteration of your technique.

TECHNIQUE TIP

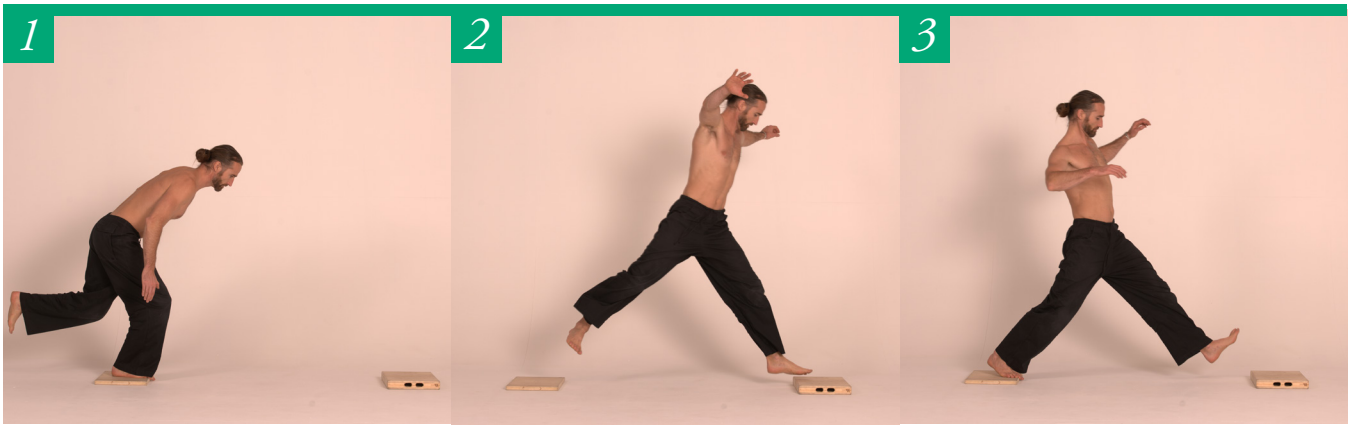
Make sure that you start practicing sprints on even and (ideally) forgiving surfaces. Beginners training on uneven surfaces can easily stumble and fall hard. Another issue when dealing with uneven surfaces is not allowing the heels to reach the ground, which makes your feet and ankles much more unstable. I recommend you allow the heel to contact the ground after the forefoot when you sprint on natural, uneven surfaces to protect your ankles. Be patient and cautious before you start practicing sprints on more challenging grounds.

Removed from Chapter 28, Airborne Movement (i.e. from pages 340 - 379 in *The Practice of Natural Movement* book).

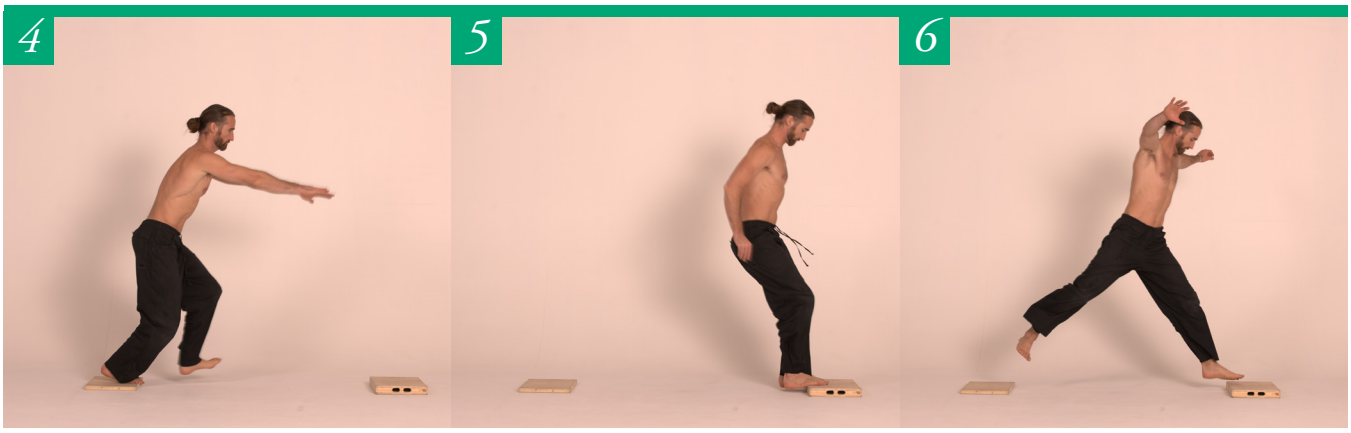
Inefficiencies of the Leg Swing Jump (i.e. from pages 348 - 350 in *The Practice of Natural Movement* book).

Faults

Aside from issues with positional control—such as a rounded back or unstable knee and hip joints that can lead to imbalance while airborne and a challenged landing—the following are some of the most common issues with the Leg Swing Jump:



1. Forcefully pushing off from the supporting leg without using a leg swing, which is equivalent to attempting a single-leg Power Jump. You waste energy, might land too short, and will land heavy.
2. Striding out and landing on a single foot with the second foot landing long after the front foot has landed. Your landing might be heavy and unstable. Usually your arms will flail around as you try to maintain balance. This is often a direct consequence of the previous fault.
3. Not using a forward lean or even a slight backward lean angle and having little speed and amplitude in the leg swing. You will land too short.



4 Forcefully pushing off the supporting leg and swinging your arms forward. Either you're trying to put more energy in the jump than you need, or you're trying to reach a distance that's too far for an effective Leg Swing Jump (which means you should do a Power Jump instead).

5 Landing on both feet at once, which means your landing might not be as light and smooth as it could be.

6 Delaying the landing of the trail foot next to the front foot. The longer it takes for your trail foot to land, the more the work of dispersing impact forces and ensuring stability is left to a single foot and leg, which is obviously more difficult and less efficient.

SAFETY NOTE

If the surface is unstable and has the potential to flip under your feet, make sure to never land on the forefoot (the ball of the foot with no room for the heels to come flat) because doing so can easily cause you an ankle sprain. If you're unsure about the stability of the landing surface and can't check it out, try to land with both feet.

Two-Step Split Landing

A landing surface can be narrow but long and aligned in parallel with your body's orientation when you launch. The disadvantage of this positioning of the landing surface is that it forces you to land with your legs in line, which narrows your base of support and can cause instability. The advantage is that, in most cases, there's enough room for either one or both feet to come fully flat and strong on the surface upon landing to put you in a Half-Split Stand or even a Split Squat. Although you may choose to land on such a surface with both feet reaching the surface simultaneously and to manage an efficient landing, it is best to approach narrow and potentially unstable surfaces with a two-step approach in which one leg handles landing precision and the second assists with stabilizing the body to a balanced position.

There are several options for a two-step landing: the front foot lands first and stays in the front, the trail foot lands first and stays in the back, or the front foot lands first and the trail foot immediately lands by travelling forward to land right in front, so it becomes the front foot. You can also decide to shift more body weight to the back foot with both feet flat on the surface, shift to the front foot flat on the surface with the back foot resting on the forefoot in a Split Squat, or use either position with your body weight equally distributed between both feet. Which landing you choose is a matter of adaptability; however, my favorite is the single forward step and shifting more of my body weight to the front foot in a Split Squat. Last, if the landing surface is really narrow and the feet might slide off of it upon landing, it's best to slightly rotate your body position while airborne to land with the feet at a slight diagonal angle, which is safer in this case.

SAFETY NOTE

Start developing familiarity with this landing at low heights and short distance a before applying it to higher landing surfaces.

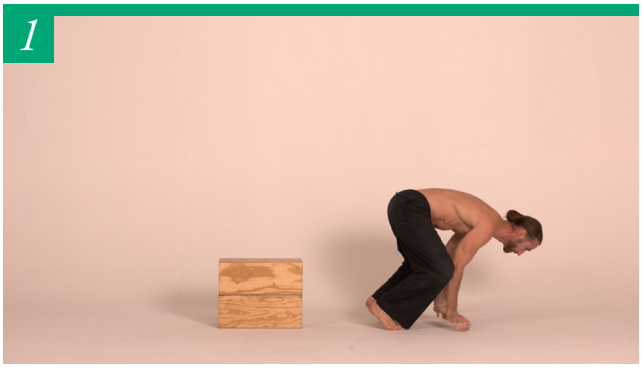
Extended Single-Leg Split Landing

When you're not confident in your ability to fully clear a gap, you may not want to commit to a square landing. Splitting your feet and legs enables you to exploit flexibility to have the landing foot reach slightly further and higher than the two even feet would reach. If you do the jump upward from the ground with no distance to clear in between, keeping the trail foot lower with the trail leg extending downward will enable you to abandon the jump more safely if needed because the trail foot is still close to the ground and ready to step back down a short distance. This landing is also used when the landing area is small in width or length (or both). In that case, landing mostly on a single foot is better for accuracy, and sometimes it's the only option available.

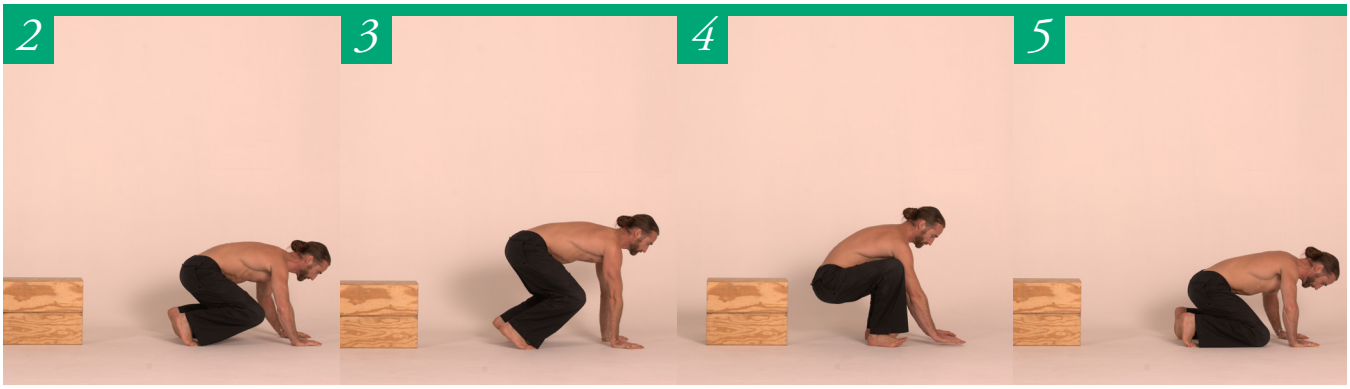
In this landing, the trail foot is quite useful and active, so this is not an actual single-foot landing where the trail foot is useless. When a vertical surface of the obstacle is available below its edge (which isn't always the case)–such as a rock or a wall—the trail foot helps stabilize the body upon landing, with the ball of the foot or the internal side of the trail foot coming against the vertical surface. The front foot handles most of the impact, but the trail foot can disperse some impact forces as well.

Inefficiencies of the Foot-to-Hand Landing (i.e. from page 361 in *The Practice of Natural Movement* book).

Faults



1. Landing with your hands too close to your feet. This shifts your center of gravity too far forward of your base of support and might throw you off balance forward, challenging the dissipating of impact forces. This is not an issue with your lean angle; it's a hand position issue. Make sure your hands land enough in front of your feet and at shoulder level.



1. Placing your hands too far in front of your body is inefficient because it reduces the range of motion of flexing your arms, or it forces your torso and head to lean down too much toward the ground to enable flexion.
2. Landing with arms in the locked-out position so they don't flex, which potentially hurts your palms, wrists, elbows, and shoulder and sends a shock wave all the way to your neck.
3. Landing with your center of gravity behind your feet. You can still reach the ground with your hands, but because you can't shift body weight to them, they can't help you absorb force. It also places your spine in a rounded position, which exposes it to excessive force from the landing. Even if the center of gravity was vertically above your base of support, it would leave the absorption of impact forces entirely to the lower body in a Square Landing manner.
4. Letting your knees drop to the ground, which hurts because your knees have no way to absorb force in this position. It also takes weight off your feet, making it much harder to push to standing, and releases muscle tension in your lower body so you lose all the elasticity needed to explode into a run.

Upward Power Jump with High Hand Reach

The Upward Power Jump is well known in track and field or basketball as the vertical jump and is generally used to measure power (force output and rate of force development).

NOTE

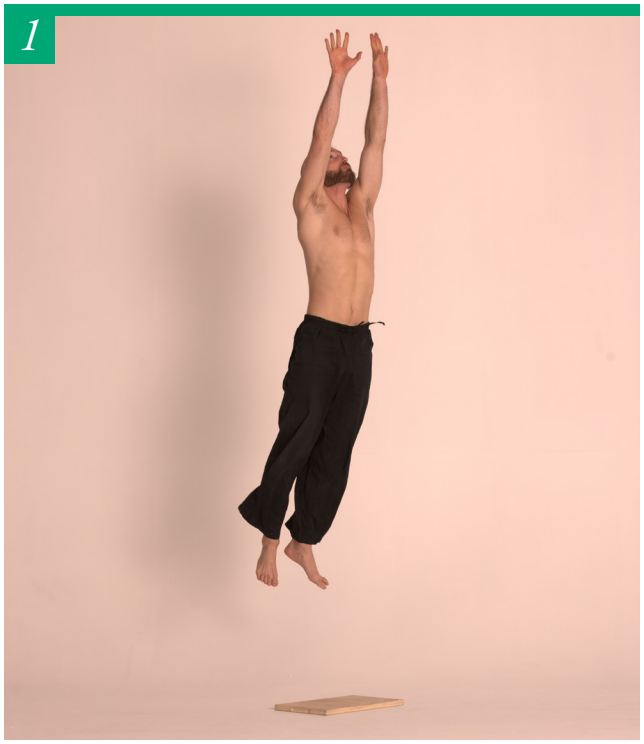
Because vertically downward jumps are also "vertical," it's more accurate to specify an upward direction rather than to leave the name as "vertical jump."

The practical purpose of this jump is to reach something straight above you with your hands, either to hit and impact it, grasp it to bring it down, or grasp it to hang from it. If you grab to a hang, the surface above you becomes the landing surface, and your hand or hands become your base of support as you transition from a jumping movement to a climbing position. Whatever the target, it needs to be within reach, and you need enough power to reach it. The target might stand above you but also slightly forward or to the side—or even backward, and you can extend one or both arms upward to reach the target. Extending a single arm enables you to reach slightly higher because only one side of your torso stretches, which allows the shoulder and the arm to elevate more. Extending both arms makes you reach slightly lower, but it gives you a stronger grip as you grasp a surface from which you need to hang. In any case, you must focus primarily on the mechanics that generate the power you need to take off high; the second concern is the arm reach.

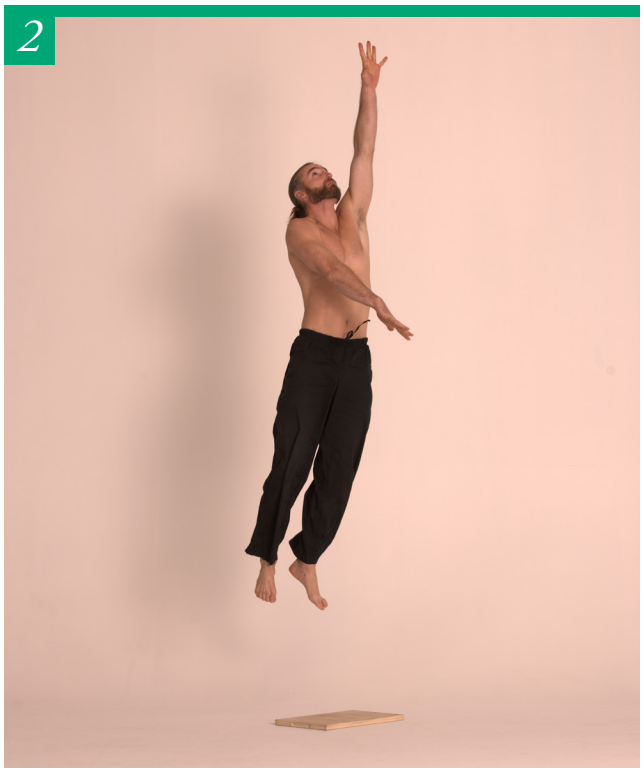
Biomechanically, this jump is like the Forward Power Jump except in three aspects:

- You want to lean down or "collapse" the trunk lower than for a Forward Power Jump. It's part of a "countermovement" strategy that lowers the center of gravity and maximizes the hip extension. You want to make sure to not lose balance forward as you triple extend.
- Your arms must swing all the way to overhead to maximize vertical velocity (which is the case if the center mass of the arms reaches as high as possible at takeoff).
- Your body must be vertical at takeoff; you shouldn't have a forward lean angle.

It's a good idea to use a limited launching surface that's vertically aligned with the target surface, so if you land beyond it you know that you had an angle at launching (unless pushing on the surface above you modified your trajectory). Focus equally on the quality of your Square Landing rather than just the intensity of your jump or what happens while you're airborne. Indeed, the vertical distance travelled is equal on both the way up and down.



1 Begin the movement in the same way as the Forward Power Jump. Because you don't necessarily need to keep your gaze up to spot your target before the takeoff, you can push your hips even farther back than normal to generate more explosiveness. Don't look up at the target because it puts your spine in a bad position for jumping. Upon jumping, extend your hips fully and extend your body straight up. Because you don't need to land on a target, don't tuck your knees. Once you come off the ground, you can tilt your head back to look at your target. Reach both arms up.



2 You also can do the technique with only one arm up because it allows a slight elevation of one shoulder if you retract it and the scapula as much as possible, which gives you close to an extra inch of reach. This variation is not as effective if the targeted surface is thick or slippery because you have a harder time holding on your entire body weight with just one hand. Additionally, you can do the Upward Power Jump with one step or more before launching. In this variation, you ground the front foot and load the leg a moment before the trail foot lands right behind the front foot; the trail leg bends and loads as well. In this case, you're loading the legs with stored elastic energy more efficiently, so you should be able to jump a little higher than when you launch from a static position.

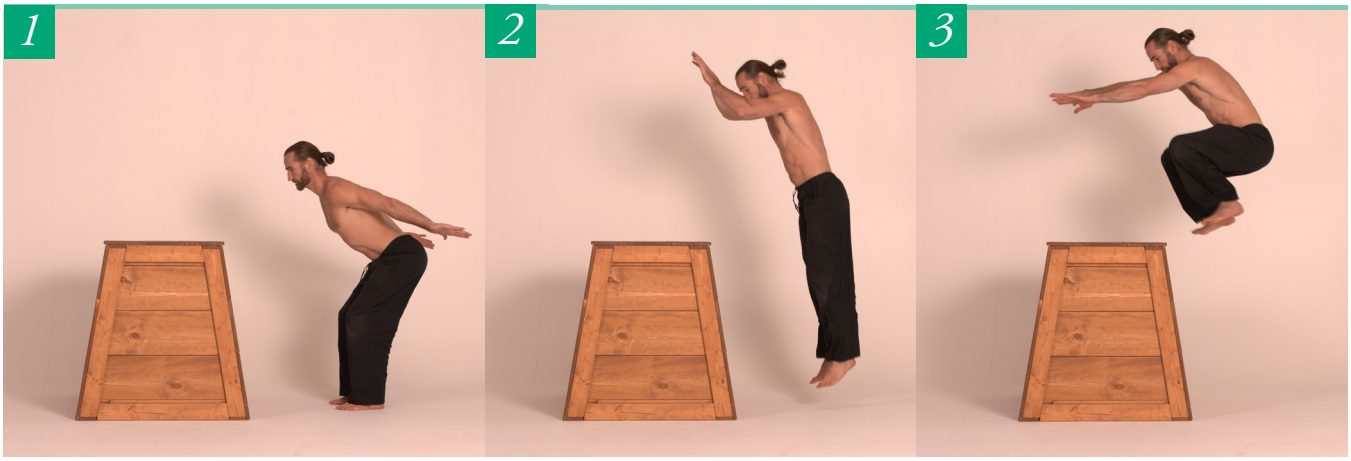
Upward Power Jump to Elevated Landing

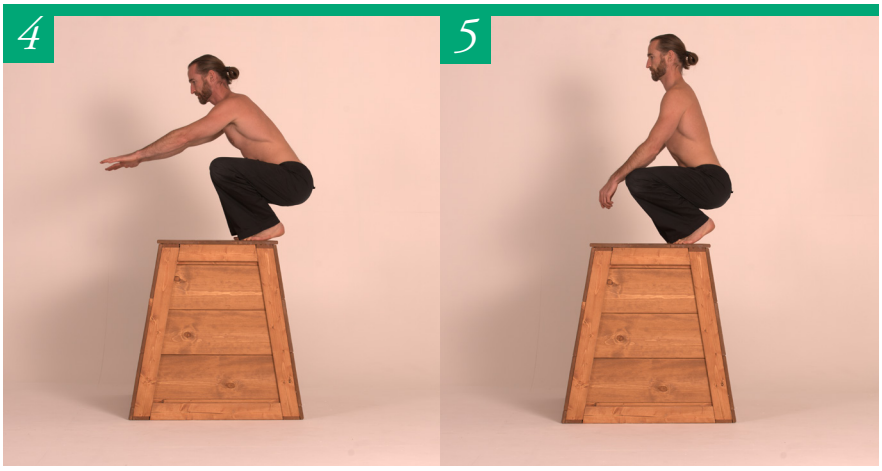
This variation of the Upward Power Jump is used to propel yourself onto an elevated surface to land on your feet and establish a base of support above the launching surface instead of descending back to it. For that reason, at equal power output, the trajectory is shorter in distance and time compared to when you jump in a forward direction. Also, the landing is much easier as the impact forces to be dispersed are close to nothing; however, if you're reaching the limits of your power, there's a risk of being unable to move your center of gravity up and forward enough vertically over your base of support. Even if your feet reach the landing surface, gravity pulls you back and down to a fall.

Please don't call this a "box" jump; the type of surface where you land is irrelevant and could be anything. The practical reason for this jump is that you need to reach a higher ground that you can't step up on, you want to get there faster than you would by climbing, or you're unable to use your arms to climb or vault onto the surface. However, unless there is a context of emergency, there are always slower but less energy-costly strategies to move upward.

The elevated landing always implies a bit of forward distance in addition to height, and the trajectory is never purely vertical. How far forward the landing surface stands in relation to the launching surface determines your lean angle at launching. The higher the landing surface, the higher and more explosively you need to tuck your knees to elevate your feet. Even though you might land in a Square Landing when the height of the landing surface is moderate, as you land higher toward your limit, you might keep your arms to the front of your body during the flight and upon landing, as well as landing in either a Deep Squat or Deep Knee Bend rather than a Half Squat or half-standing position. If you must exaggeratedly round your back upon landing with your rear close to the level of your feet, which is a compromised position, and you're barely able to re-establish your balance on top, then you're clearly reaching the limits of your upward jump ability. In your practice, you can attempt maximum jumps sometimes, but it's not sustainable in the long run. There are better ways to increase power output.

Like the Forward Power Jump, a skillful Upward Power Jump is often assessed by how light, balanced, and relaxed the landing is. Establish an efficient pattern on low-elevation landing surfaces before you build intensity. Aiming first at a knee-high landing is a good goal, then you can progress to hip level, navel level, or higher.

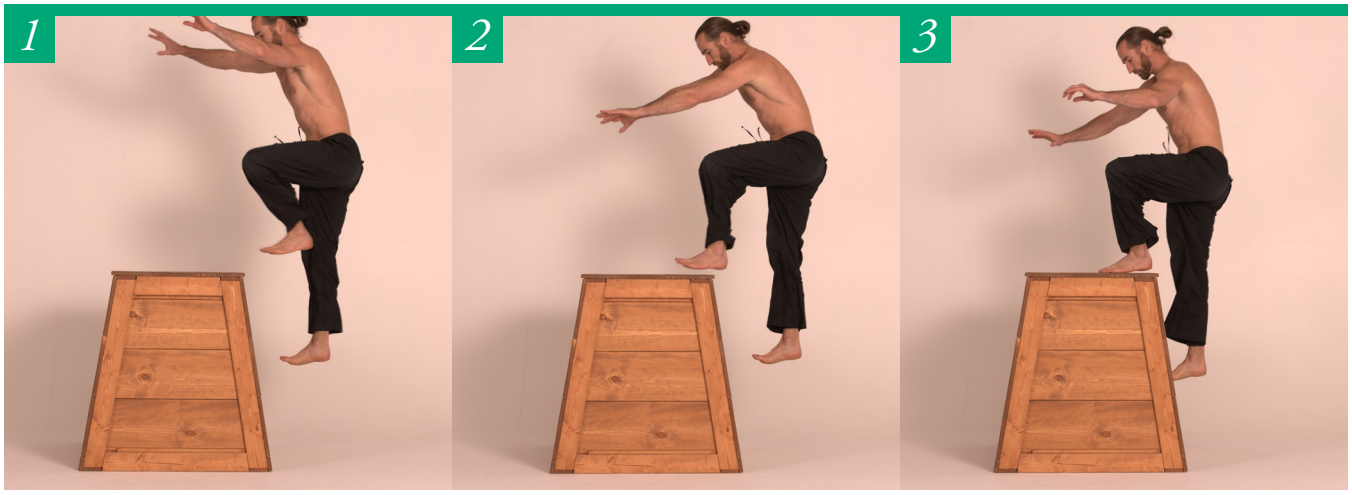




1. Begin standing in a relaxed, upright stance facing the obstacle. You should be far enough away that your hands don't run into the box when you swing your arms forward. Move your hips backward in a Hip Hinge, bend your knees slightly, and pull your arms back. Keep your spine straight and look at the top of the surface where you're jumping. You should aim to jump slightly above the top of the obstacle, so that you arc up and then down onto it rather than going straight from the ground to the edge, which can cause you to catch your toes and fall back.
2. Swing your arms up to generate momentum and explosively extend your hips and then your legs so you take off.
3. While you're airborne and still looking at your target, swiftly tuck your knees up to ensure your feet clear the edge of the box. Bring your arms down in front to prepare for the landing.
4. Land on the balls of your feet with your arms extended in front to help maintain balance. Keep your spine straight and don't collapse into the landing in a compromised position.
5. Come to rest in a Deep Knee Bend with upright posture. You also can use a Deep Squat if you have landed more forward. Hold this position for a second or two to make sure your landing was controlled.
6. When you've attained the maximum height you can reach, progressions involve more challenging landing surfaces and skill-to-skill transitions.

Upward Power Jump to Elevated Extended Two-Step Split Landing

If you're not confident in your ability to reach the landing surface with two feet or in a balanced manner, you may use a Split Landing.



1. Launch the jump as an Upward Power Jump, but tuck only one knee while you're airborne and leave the trailing leg straight. At this stage, both feet are still vertically aligned (or quite close to it). Keep looking at your landing surface.
2. When the lead foot has reached a level slightly above the level of the landing surface, extend the lead leg forward toward the targeted landing area. If you're too far away, your foot may briefly reach the surface, but you won't be able to turn the foot into an actual point of support for your body, and you'll fall back down.
3. If there's enough space for your whole foot to come flat on the surface, land the ball of the foot first and then land the heel. If the surface is too small, place only the ball of the foot on the support. Plant your upper foot; from there you can pull and flex your leg to pull yourself toward the surface; the forward momentum of the body also helps with this. Keeping your arms in front of you helps you shift your weight forward onto your single point of support. Simultaneously, the trailing leg gets close to the vertical surface of the obstacle, which enables you to apply pressure against it with the ball of your foot to help stabilize your whole body. When you're stable, you can rest here, bring the trailing leg up into a Squat on top, or step up to standing.

Rebound

Another important progression is to rebound to another Power Jump immediately upon completing a

Square Landing (though the landing is modified a little to enable rebounding). Landing involves an eccentric phase, whereas launching requires a concentric phase.

When landing is immediately followed by launching, the elastic energy stored through the "stretch-shortening cycle" during the eccentric phase is transferred toward the concentric phase. The in-between phase is called amortization; when the amortization phase is kept to such a minimum that it takes place in an instant without dissipation of the elastic energy stored upon landing, "plyometric" contraction and strength are produced, transforming the landing action into a launching action. Timing and duration are crucial—with an amortization period usually less than 0.2 seconds—to make this "reversal" in strength efficient. We could compare the landing phase to bending a bow to store a lot of elastic energy in the wood and immediately releasing the string instead of holding it to slowly return to the normal shape of the bow at rest.

Rebounding is known to develop plyometric strength, which is a very important aspect of strength. Remember that the primary value of such ability lies in practical function—for instance, if you are jumping between rocks to cross a river, you might want to immediately jump as soon as you land rather than stopping on each rock. Another example would be to land and immediately transition to a Dive Roll or to sprinting, which also requires plyometric strength. Rebounding is not exclusive to the Power Jump, which means that you may rebound following a different jumping pattern. Rebounding is not exclusive to the Square Landing either; for instance, the Stride Jump relies on the exact same principle with a landing done on a single leg. However, it's the Power Jump combined with the Square Landing that's amazing for developing plyometric strength, and it's the safer way to do it for beginners.

High Hand-Reach Upward Split Jump

The Split Jump can be used with an upward trajectory to reach an elevated surface with the hands (or to jump over or onto an elevated obstacle). If the hanging surface is at a distance forward, then clearly a launching lean angle is needed, and the landing becomes a skill-to-skill transition from jumping to climbing. A variation of it is the High Hand-Reach Split Jump, where the takeoff is entirely vertical with zero lean, so you can grab an elevated handhold or fruit, or you can hit or catch something overhead. In this case, the mechanics of the launching is the same, but the airborne position and landing differ.

If you've already assessed how high you can jump and reach with your hand with an Upward Power Jump, you can compare how much vertical distance you're able to gain with a strict Upward Split Jump (without a lean and forward distance). The greater the difference in upward reach with the Upward Power Jump means the greater your Upward Split Jump technique is.

Upward Step-Up Split Jump

The Upward Step-Up Split Jump enables you to propel yourself upward by having your front foot step higher than your trail foot on a vertical or slightly inclined surface (or even a horizontal one), usually with your body and arm(s) fully extended to reach a height. For instance, you might step on the trunk of a tall tree to reach a high branch, step on a large boulder to reach a handhold, or step on a tall wall to grab the edge of it. You can do the same movement to grab something that's hanging high, so you can bring it down. In most cases, the Upward Step-Up Split Jump is a skill-to-skill transition to a hanging position; it also can precede a Double-Handed Side Vault over an obstacle.

You can do the Upward Split Jump without a step-up in the absence of a raised stepping surface to propel yourself upward and forward to land with your feet on an elevated surface or to jump over an obstacle and land on the other side of it.

Before you practice the step-up version, it's a good idea to practice the Upward Split Jump without the step-up; start from a stationary standing position and then add stepping and running, making sure that you are in control of the landing.

The Step-Up

Approaching the step-up can be intimidating if you attempt to run toward the obstacle on your first attempt, yet it has crucial importance. It's wise to familiarize yourself with the step-up with little distance and speed preceding it because the effectiveness and efficiency of your movement has a lot to do with correct foot position. You want to turn a fully horizontal momentum and direction into a fully vertical momentum and direction, which happens only if you can create the necessary friction or "traction" in the stepping foot for it to stick long enough to the stepping surface for velocity to be transferred and power to be produced all through this single point of support. However, lack of friction is not always due to inefficiency; it could have to do with the surface itself (smooth, wet), your footwear (slippery sole), or both.

Your first movement drill is to take at most two wide steps back from the obstacle (for example, a wall, boulder, or large tree) and practice stepping toward it, stepping up, and not trying to reach too high or even reach out with your arms. Instead, focus on finding the optimum range between the trail and front foot and the optimum foot height and position upon stepping. You want to be able to plant your foot firmly onto the vertical surface and elevate your body upright and vertically without your foot sliding down as you press on it.

NOTE

The distance between the trail and front foot or distance between the trail foot and the base of the vertical surface is very important because it's what enables you to optimally turn horizontal velocity into vertical velocity.

On the one hand, if the stepping distance is too short, your whole body will be too close to the obstacle to handle the forward momentum well; you might go straight forward into the obstacle and possibly bruise your knee, or you might be forced to step too low because there's not enough space left to step higher, which makes the stepping foot slide down so you stop entirely. On the other hand, if the distance is too far, the front leg extends way too much and pushes you back as you step before the stepping foot and leg can be in position to transfer velocity vertically. It gets even worse if you're trying to Stride Jump onto the obstacle with significant airborne time.

Note that the trail foot does briefly leave ground before the front foot lands, but the airborne phase is almost nonexistent. However, if you were to step-up with the trail foot still grounded as the front foot lands, you would lose a significant portion of your horizontal velocity.

You must experiment to find your ideal stepping distance. For me, the ideal distance roughly equals the length between my feet and my waist, so if I sit in front of the obstacle with my legs fully extended and my feet against the vertical surface, I should step right in front of where my rear is sitting. When you find your ideal distance, it shouldn't vary much, even with greater forward velocity.

As for the height of the step-up, your foot should be above knee level and below hip level. If the stepping foot is too low, it's very likely to slide down because your leg and body weight are exerting a downward force on the point of support. If the stepping foot is too high, you can't transform horizontal velocity to upward momentum; the momentum will be short-lived and gone before your center of gravity has elevated enough for the leg to be in the right position to produce power.

Finally, the position of your stepping foot and ankle are crucial. The forefoot must land first, with the ball of the foot and big toe firmly pressing perpendicularly against the launching surface with a flexion of the big toe. Your ankle flexion should keep the heel below the forefoot at about a 45-degree angle (see photo 1 in the next set of photos).

Another significant difference between the Upward Step-Up Split Jump and the Forward Split Jump is the tremendous importance of where you place your foot on the ground for the next-to-last step. Even when the step-up foot is on a surface that provides good friction to push off of it, your ability to turn forward velocity into upward velocity depends

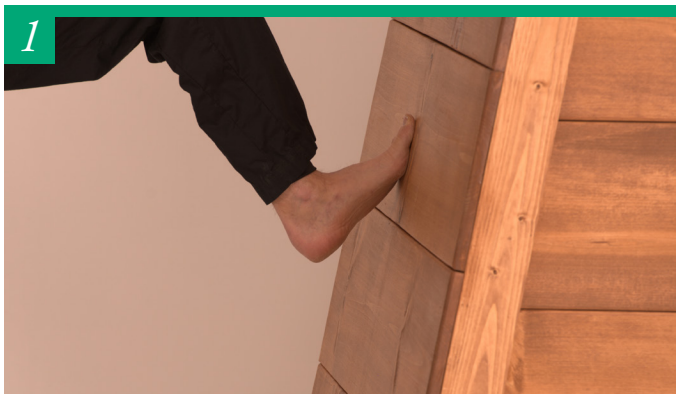
as much on the efficiency of the step between the ground and the vertical surface of support as it depends on the launching step-up. Indeed the step-up foot is not a point of support with a footing friction level strong enough to transfer that much velocity or produce that much power, whereas the last step on the ground is reliable and can effectively initiate the redirection of the velocity upward before the step-up actually produces the take-off.

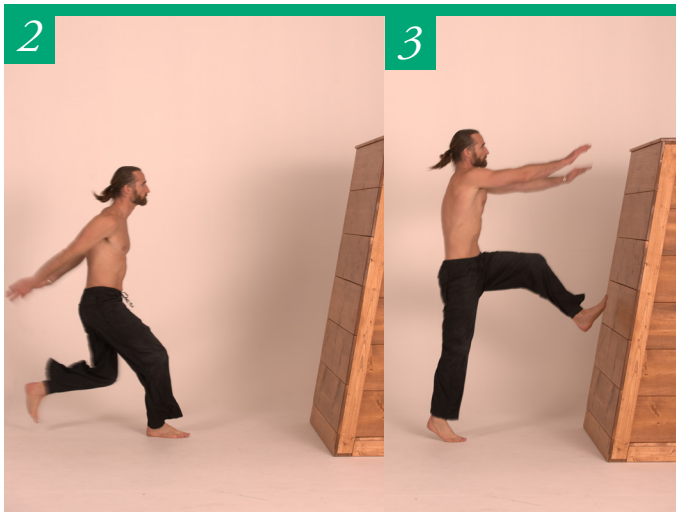
By the time you step up, your arms are already extended, and the step on the wall helps do the following:

- Create a bit of extra force (muscular action)
- Convert partially horizontal momentum to 100% vertical momentum (and prevent crashing into the wall)

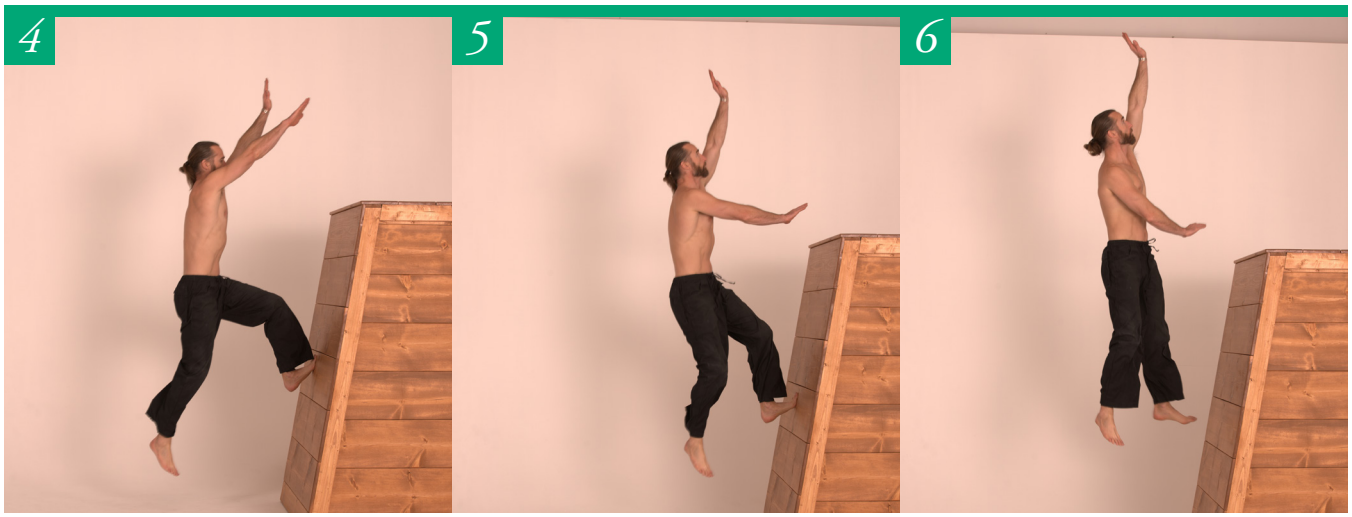
To summarize, the length of the last stride before you step up should place you at the best range to transfer forward momentum to upward momentum, but it's the position of the step-up foot that enables the transfer and enables the leg to produce power and add to upward momentum. Both are strictly related for overall efficiency and performance in this technique. In short, if the step-up is bad, the whole movement is bad, and you're wasting precious time and energy.

To the movement! An inclined surface is easier to start with than a perfectly vertical surface.





1. Begin stepping swiftly toward the obstacle with an erect posture. You may pull your arms back as you take the final step or keep them bent and ready to swing upward in front of your body.
2. Swinging your arms forward and upward generates a little additional upward momentum with your last step on the ground and just before you step onto the launching surface. Your trail foot is just about to leave ground, and the front foot is pointing upward and forward toward the launching surface as your foot is just about to connect with the surface.
3. Transfer your body weight onto the lead foot on the stepping surface, making sure to project force in the foot perpendicularly to the surface rather than down. Your body is still moving forward to get closer to the obstacle, and the lead knee comes forward as well, but it's always slightly behind the foot. As friction in the lead foot is created, the lead leg starts pushing up to turn horizontal velocity to upward momentum and elevate the hips farther above the lead foot. Keep elevating your arms and maintaining a vertical body position.



4 Continue pushing off the stepping leg to finish transferring the momentum upward and keep generating more power. Reach up with the arm on the same side as your stepping leg to lengthen your arms as much as possible and attain the greatest height. Optionally, you may reach up with both arms to hang with both hands.

5 Fully extend your lead leg and your reaching arm, using the other arm to maintain clearance from the obstacle if necessary. The lead foot eventually leaves off the supporting surface, and your body should reach its highest elevation (as shown by the elevation of the hand, head, or hips in relation to the obstacle) while maintaining a vertical position and the same distance from the obstacle. If there's nothing to hang on to or you're failing to reach high enough to hold your hang, you obviously need to prepare for landing back down.

Progressions include reaching higher, practicing on diverse and more challenging surfaces, and managing transitions to hanging. You also can explore directional modifications, such as reaching something that's both above and away to the back or side of the launching surface.

NOTE

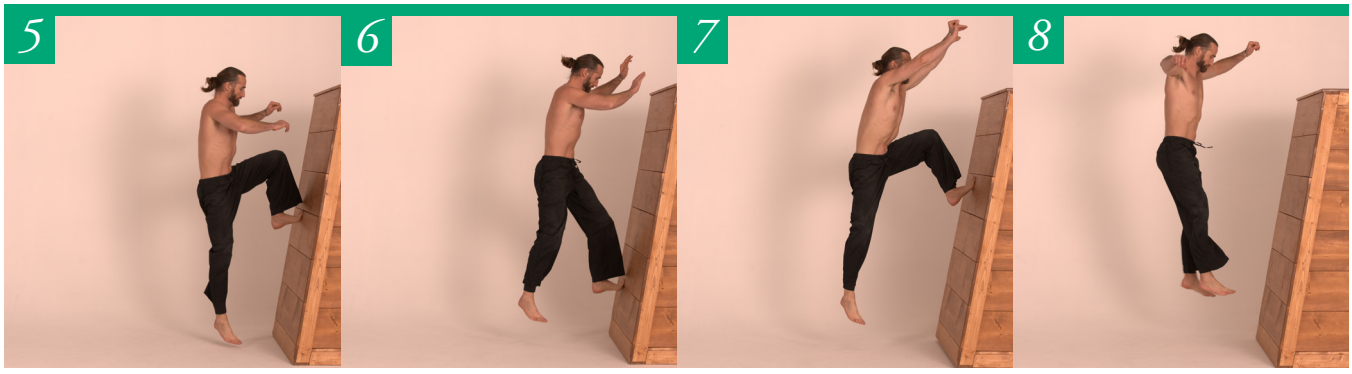
In terms of increasing the maximum elevation reached, understand that there is only a certain level of horizontal velocity that you can successfully transfer to upward momentum. Past a certain speed, additional forward momentum doesn't add to your upward momentum. It either wastes energy or messes with your efficiency. It's best to learn to maximize forward speed and upward momentum over a shorter distance and fewer steps. Ultimately, it's the power you generate in your leg that matters the most.

Although you don't need a very wide surface to launch this jump, you do need a clear, horizontal space in front of it to ensure steady, unimpaired stepping. Anything in your way challenges your stability and speed, which renders the jump tricky or even impossible.

Faults

1-2 Stalling before stepping up and trying to step up with the trail foot still on the ground, then pushing off the supporting leg and landing the lead foot flat on the obstacle. It prevents you from having enough forward momentum to start changing its direction to upward. (Photos 1 and 2)

3-4 Taking off too far away with an airborne moment. If you take your Stride Jump too far from the box, you have mainly horizontal momentum, which makes it difficult to redirect into vertical momentum, and you simply push away from the wall or the lead foot slides down. (Photos 3 and 4)



5-6 Having your body too close to the launching surface, your lead leg overly bent, and the direction of force straight down. Because there is no surface of support directly beneath your foot, your foot simply slides down. You won't go anywhere. (Photos 5 and 6)

7-8 Stepping too high. If you step above your center of gravity, you don't convert forward momentum to upward momentum, and you're pushed back. Your foot needs to push from under the height of your hips to generate vertical movement. (Photos 7 and 8)

9-10 Leaning back. Here, you can generate vertical momentum, but you're at an angle going backward, which lowers the maximum upward elevation you should reach. You must create a fully vertical trajectory to reach the highest elevation you can. (Photos 9 and 10)

Sideways Step-Up Split Jump

You also can do the Split Jump sideways, which can be useful if there's not space available to create the necessary forward momentum. You still can create forward momentum at an angle with the landing surface; you just switch direction upon launching. The sequence, timing, and overall way to generate power and velocity are identical; however, you modify the position of the launching to generate a sideways direction, which can be done in a similar fashion without the step-up on an elevated surface. Launching from a higher ground enables you to either reach higher upward as in the Upward Step-Up Split Jump or reach farther to the side. Practice the Sideways Split Jump first without the step-up.

1. Approach the movement and stepping surface the same way you do in the Upward Step-Up Split Jump. It's essential that your stepping foot at launching is opposite to the direction you're turning to. For instance, if you're jumping to the right, your power step should be done on your left leg. This enables you to rotate your hips and torso and swing your arms and free leg in the direction you're going.
2. Step up firmly, making sure to get traction for your foot by applying force perpendicular to the wall and to load the leg to produce power. As soon as your hips have reached maximum elevation, immediately rotate your head, torso, and hip toward the intended direction. Because you're pushing off the surface to redirect momentum mostly in a different horizontal direction, the foot position is not as crucial as in the Upward Step-Up Split Jump.
3. Very quickly, bring up your trailing leg and drive your knee at an angle in the direction you want to go. At the same time, swing your arms in that direction and then push off the obstacle with the supporting leg.
4. Bring both legs together so that you land with both feet at the same time. Spot your landing, and transition into a Square Landing (or any other landing technique). Because of the change of direction, be sure your feet and both knees are pointing in the direction of your movement to avoid excessive torque on your knees upon landing.

Stride Jump

The Stride Jump is a single-leg jumping technique that is a variation of the Split Jump, and the two jumps might look similar at first glance, but there are significant differences that are worth describing.

First the Stride Jump is a form of leaping, where you launch the jump from one foot and you land on the opposite foot. You often immediately rebound and jump forward again upon landing. While you're airborne, your legs remain in a split position and do not assemble; only the front leg handles the landing, whereas the Split Jump usually ends in a Square Landing on both feet. While you're airborne, you extend the front leg forward with little flexion, and you don't tuck the knee as in the Split Jump.

The Stride Jump is unlike the Split Jump in that there's no Hip Hinge upon launching, the torso and hips stay erect and vertically aligned, and a single arm swings forward while the other arm is pulled to the back rather than both arms swinging forward. Obviously, although the Split Jump does require some power, it's mainly the horizontal momentum created by a run up that generates most of the velocity of the jump and the distance covered; you would be hard pressed to Stride Jump from a static standing stance the spot, and, if you tried, you wouldn't land very far, or you would have to modify your pattern to resemble a Split Jump.

The Stride Jump is a form of gait (like running); it's basically what you would do if you were to run with very broad, jumping strides. For that reason, this movement is normally easy to learn, and it's often rapidly efficient. As you run, you suddenly add power by pushing off one leg and simultaneously making a wide arm movement so you elongate your stride and land far. As a matter of fact, striding naturally blends with running whenever the terrain gets challenging—for instance, it can be necessary to stride out to avoid a short gap, a hole, a stone, or anything in the way that could make stepping unstable or unsafe.

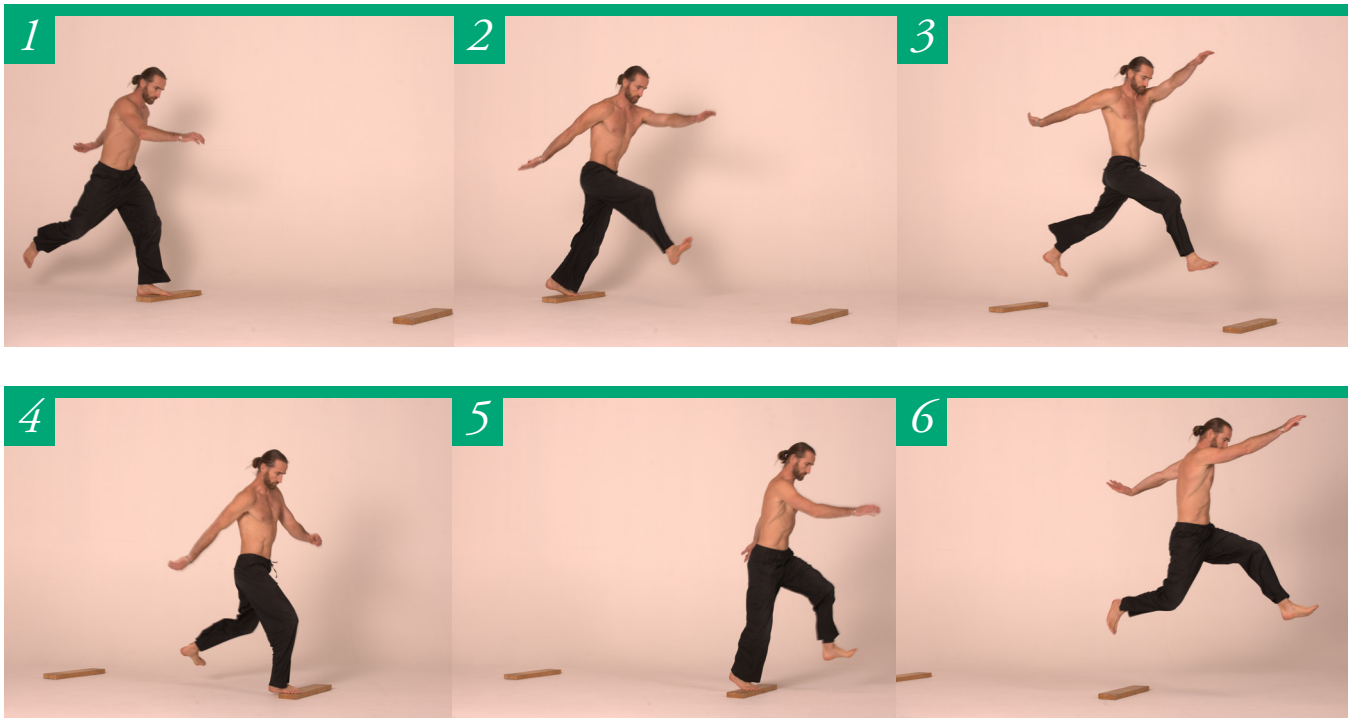
You could use this movement to step on rocks or raised surfaces across a body of water or to cross larger gaps with greater running velocity, while ensuring a smooth landing that enables smoothly resuming a regular running gait. Most often, the point of the Stride Jump isn't to cover as much ground as possible but to land accurately while rebounding to avoid loss of speed during a run. It's technically possible to use the Split Jump to clear an elevated obstacle in the manner of jumping over hurdles in athletics, where the knee of the trailing leg is lifted to avoid contact with the obstacle. However, unlike the hurdles in sports, real-world obstacles are unmovable and won't topple if you hit them, which means there's a serious risk of hurting your knee and falling badly. For this reason, a vaulting approach to clearing elevated obstacles while running is a safer strategy.

A first approach to learn this technique is to run on a flat surface with longer strides than when you run. Maintain a natural arm movement as I described in Chapter 30, but this time have both arms fully lengthened and relaxed. Young children often start running this way.

Next, use the same stride length until you decide to jump over a greater distance by loading the front leg to generate more power and stride length, then immediately resume the same striding pattern upon landing. Compared to a maximum-distance Power Jump, the maximum distance you cover with a Stride Jump is relatively similar. The difference is that you can't rebound after a maximum-distance Power Jump.

If you don't have the elastic and plyometric strength in the foot, ankle, and calf to land and rebound on a single foot, then your foot "collapses" upon the first landing; any attempt to continue with following strides is compromised, or at least your jumping distance upon the second stride is diminished. Therefore, the ability to increase stride distance or the number of consecutive long strides has to do with plyometric strength rather than run-up momentum or leg power. It's best to not aim at maximum stride distance at first if you notice a lack of "bounciness" when you land. Remember also that the most frequent practical purpose of the Stride Jump is to cross obstacles and land with accuracy while maintaining running speed; the goal isn't to cover the greatest ground distance.

You want to simulate an actual launch surface and gap where you need to step with accuracy, so draw a line in the dirt, tape one on the floor, or place a launching surface in front of you. Don't try to run too fast and jump too far at first because you're landing on a single leg, which is more challenging than landing on two feet.



1 Ensure the accuracy of the take-off step, which is your last step. Your position is like running, with the arm opposite to the lead leg in the front, and the arm on the same side as the lead leg in the back of the body. The position of your arms can be either extended or bent at an angle, as long as they are pull ed far forward and backward to prepare to swing swiftly and with more amplitude. Load the lead, supporting leg by bending your knee and lowering your center of gravity a little more than normal (but don't overdo it).

2 Simultaneously swiftly swing the trail leg and arm forward with amplitude to generate forward momentum; at the same time, strongly push off the supporting leg to propel yourself in the air. Keep both the swinging leg and arm extended. You may have a slight forward launch angle. If your landing is going be on a small surface and you need to land accurately, keep an eye on the landing spot without leaning forward.

3 While airborne, regain a more vertical stance as you reach your highest elevation at around mid-trajectory. Your position should be balanced and symmetrical with your arms and legs split at about a 45-degree angle.

4 As you're quickly descending toward the landing, focus on the moment the forefoot of the lead foot reconnects with the ground. You may maintain visual input with the landing surface when it's small, but look forward again as soon as you're grounded. As soon as you feel the ground, prepare to swing the trail arm forward and the front arm backward simultaneously as you load the lead leg. This position is like your initial position except the opposite leg is in the lead.

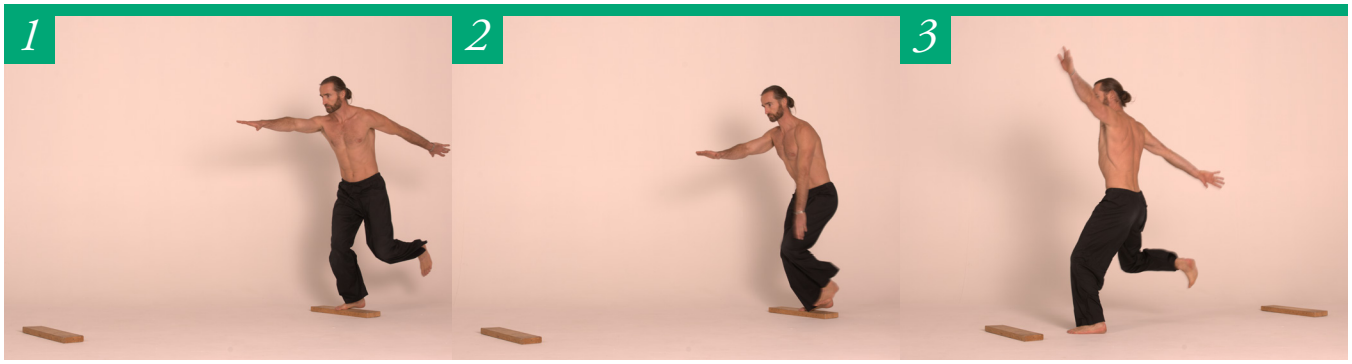
5 Swiftly swing the trail leg to the front, swing the trail arm forward, and swing the front arm backward simultaneously to initiate another long stride.

6 Take off and stride out again. You position is like the first airborne transition, but it's on the opposite side.

You may Stride Jump this way multiple times in a row for practice or because it's required by the context. If you need to transition to regular running upon landing, you won't swing your extended arms with speed and amplitude; instead, bend them for regular running position, speed, and amplitude. As you bring the trail leg to the front, it resumes a regular running position instead of extending and swinging swiftly forward.

Faults

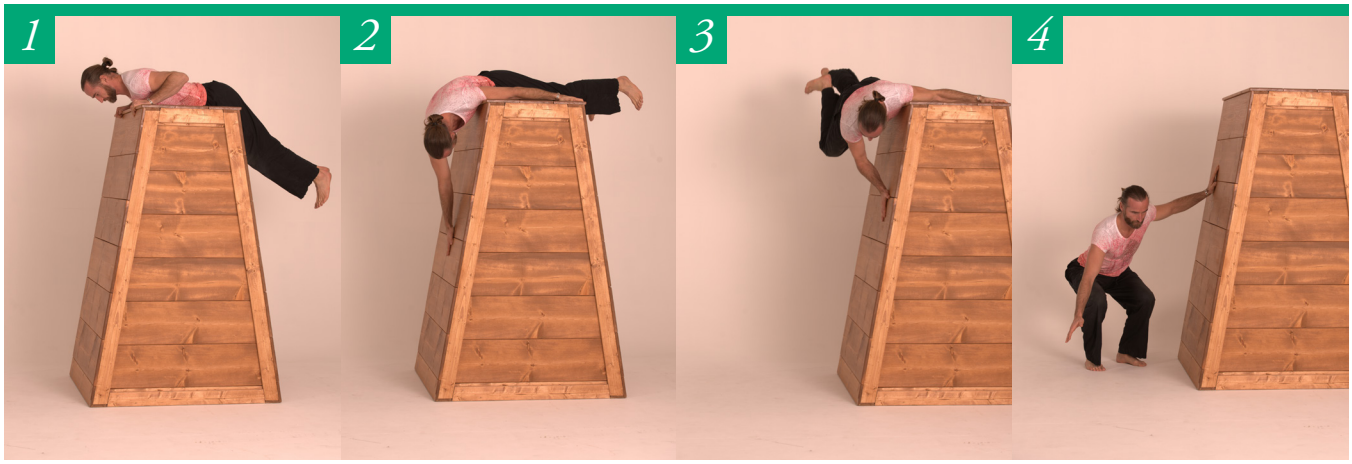
The most common fault with the Stride Jump is overthinking it, which can lead to confusion (such as of the arm position) at launching. The consequence of launching the jump with the lead leg and arm being on the same side is that the trail leg and arm will swing forward on the same side, which will completely throw you off and ruin the launching and positional control during trajectory. It may even initiate a slight rotation of your whole body while in the air and compromise your landing. (Photos 1, 2, and 3)



Belly Vault

The belly vault is most often used to rapidly pass elevated obstacles, such as walls or fences. It may immediately follow a run, upward jump, and a climb until the belly can reach the top surface, so the upper body can lean down toward the other side of the obstacle, with no pause until landing on the opposite side is made. However, you can pause to ensure safety before you climb down the other side of the obstacle. As a matter of fact, the same technique can be initiated from an elevated surface when you're already standing and don't have momentum.

In the Belly Vault, your center of gravity stays as close as possible to the top of the obstacle without a vertical space between the body and the top surface. When you use this vault, you avoid unnecessary elevation and momentum before you flip to the other side, which reduces impact forces upon landing and is particularly useful when you're loaded with a backpack or equipment. This approach is also perfect for ensuring stability when the surface is unstable, such as with fences or gates.



1. Immediately after climbing to the top surface of the obstacle, shift your body weight and balance on your belly so you're facedown and looking at the other side of obstacle. Spot your landing area to ensure it's clear and safe. Use your hands to secure your balance or, if the top of the obstacle is relatively wide, to prepare to pull your body forward to shift your center of gravity closer to the edge.
2. Pull from your hands to shift your weight forward so your chest moves off the top of the obstacle and your weight is supported by your belly on the edge of the box. Reach one arm far down on the front of the obstacle and press your hand firmly on it, fingers down, while securing the hand of the trail hand on the opposite edge, close to the body. Depending on width of the top surface, you may must extend your arm fully on a wide surface, or keep it fully bent if it's a narrow surface.
3. Securing your balance and stability through both arms and strongly contracting your abdomen, swiftly push off your belly and swing your hips and legs over the edge toward the side of your reaching arm. A swift-enough motion should create sufficient clearance for you to avoid rubbing against and sliding down the other side of the obstacle; try to keep your whole body off the obstacle except for your hand and arm.
4. Let go of the trail arm from which you're hanging but briefly continue assisting the upward repositioning of your body through the lead arm until you land on your feet in a Square Landing. You may keep the trail arm extended toward the obstacle to maintain a distance with it if necessary.

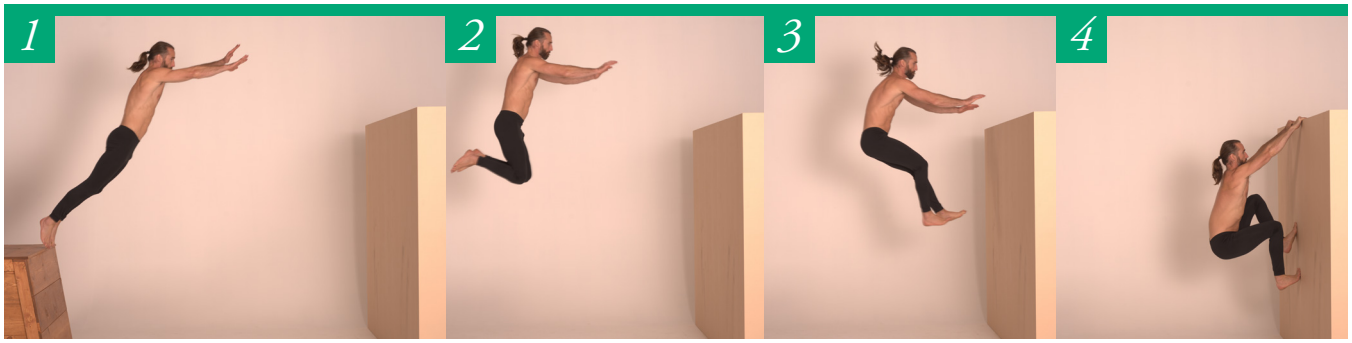
TECHNIQUE TIP

Start with a non-intimidating obstacle that's as low as 4 or 5 feet. Ideally, it should have a soft surface—such as grass, sand, or a mat—on the side on which you'll be landing until you feel confident in your ability to reposition your body upward before landing on your feet and before you move up to higher obstacles or greater depths.

Skill-to-Skill: Forward-Downward Power Jump to a Foot-Hand Hang

As I previously mentioned, launching, trajectory, and landing are related but not predetermined. You won't land every jump on your feet on a wide, horizontal surface. Often jumps involve skill-to-skill transitions, such as the Power Jump to a Foot-Hand Hang. You can use this technique to jump onto a wall in an urban area or to land on a relatively narrow tree trunk (with a slightly modified Foot-Hand Hang position). This skill-to-skill transition is useful when the forward distance to be travelled across a gap to land on your feet on the top edge of the opposite surface of support exceeds the maximum distance you can cover. Instead your hands will reach the top edge of the opposite surface of support with your feet landing below your hands.

Landing in a Foot-Hand Hang enables you to reach and land on a vertical surface that's farther than landing on the feet, with the feet landing below the height of the launching surface,



1. Face the landing surface and get a quick sense of how much power you need to generate and where your feet should land. Initiate a Forward Power Jump, keeping your gaze on the box.
2. As in the regular Power Jump, bend your knees and then bring them forward to the front to maintain positional control while you're airborne. Unlike when you're planning for a Square Landing, keep both arms out in front of you.
3. Keep a slight forward lean of the torso to keep your hands and feet close to vertical alignment and extend your legs toward the landing surface; start to slightly move them apart as you land with your feet in a staggered position. (Although you also can keep your legs together so you land in a Square Landing.) Your hands and feet are level or close to it. Using peripheral vision, keep looking where you want your hands and feet to connect with the landing surface.
4. Depending on your trajectory, your feet may land briefly before your hands, at the same time, or slightly after. In any case, your lower body should absorb most of the impact forces, whereas your hands secure a handhold on the top edge to hang from it, preventing your upper body from moving forward, and participating in establishing a balanced position upon landing. Flex your ankles, knees, and hips to absorb the force of the landing so that your hands don't bear the full weight and momentum of your body. Depending on your foot position at landing, as well as the landing surface (or the sole of your footwear), your feet or a single foot may slide down slightly. Landing with staggered feet (which are about hip width apart) allows for a wider and more stable base of support and better management of impact forces through the feet. In case you miss the landing entirely and bounce off, you want to regain a vertical body position as soon as possible to prepare to do a Back Roll immediately upon landing if the depth is sustainable and the landing surface suitable for such a transition.

Faults

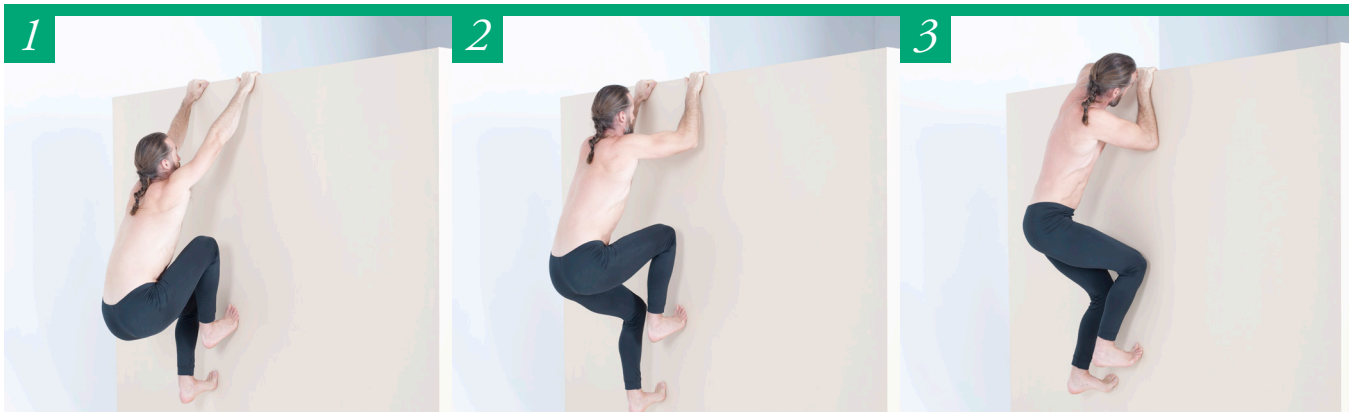
- Leaning forward too much upon landing might make you land with your feet too low and your body position too vertical, which makes you slide down so your body is extended fully downward in a Dead Hang.
- Keeping the torso vertical or leaning backward too much upon landing and missing the edge before your hands can reach it or get a sufficiently strong grip on it, which causes you to bounce off the surface and fall on your back.
- Lifting your feet too high before landing makes you land in an overly compact position where your ankles, knees, and hips are already flexed so they don't absorb impact forces efficiently. You might bounce off the landing surface to a fall.
- Landing both with your feet too high and your hands too far behind your feet is guaranteed to make you bounce off at landing.

TECHNIQUE TIP

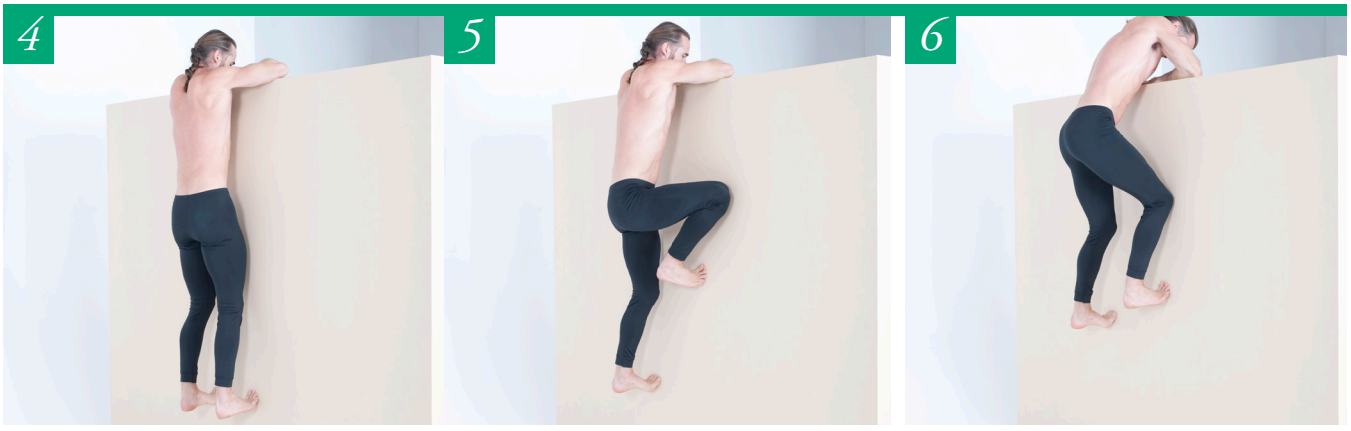
If you're landing on a tall but narrow surface, such as a tree trunk, your hands need to reach around the sides in an open-hand fashion, which is much more technical and challenging. Another form of transition to climbing involves landing in a Hand Hang on a horizontal surface (a branch, cable, or bar) or a vertical one, such as when you grasp a vertical rope (see the following photo) before your feet and legs can assist with hanging and climbing.

Removed from Chapter 29, Climbing Movement (i.e. from pages 380 - 424 in *The Practice of Natural Movement* book).

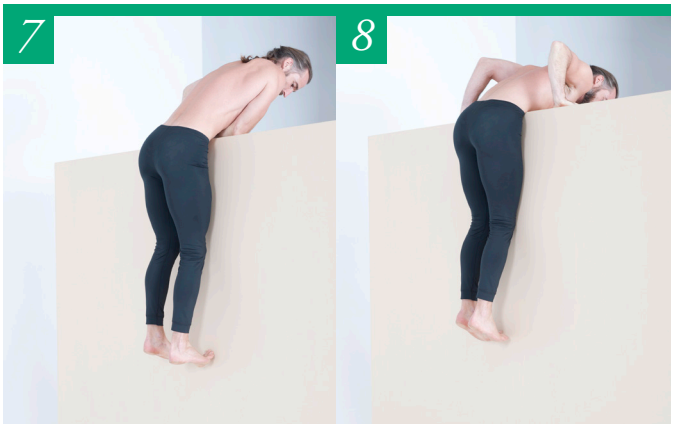
Push Pop-Up



1. Start in a Split Bent-Legs Foot-Hand position.
2. Push off your legs and flex your arms to pull from them to elevate your center of gravity.
3. Without losing momentum, release one hand to bring that forearm on top of the surface. The lead foot (the one that's higher on the vertical surface) that's opposite to the moving arm might slide down a little because of the change of point of support and position.



4. Press down hard on the forearm, keep pressing on your feet, and pull from the hand to bring the other forearm on top of the surface. Press down on both forearms to maintain the position and keep the balls of the feet on the vertical surface.
5. Pull one foot higher on the vertical surface.
6. Press down on your forearms to initiate a push off the higher foot, doing your best to maintain friction in the feet and avoid having them slide, and immediately pull up from your forearms. It's all right if your foot slides down at some point if you have managed to generate a push from the foot before it happens.



7 Pull all the way up and forward in a lean over the top surface so gravity does not pull you back down.

8 Move your hands out on each side of your body so you can press up to exit by climbing in a balancing Vertical Hand Press and a Tripod Get-Up.

Foot-Hand Climb Ipsilateral 4/2

1. Step up onto the surface in an ipsilateral position similar to an ipsilateral Foot-Hand Crawl position.
2. Shift all your body weight to the upper foot and hand, and quickly release the lower foot and hand to move upward while maintaining balance in an ipsilateral position with two points of support.
3. Place the moving foot and hand at some distance above the foot and hand on the opposite side, which makes them the upper foot and hand, and establishing an ipsilateral position with four points of support on the opposite side.

A contralateral pattern would follow the exact same sequence and timing as the technique for the ipsilateral climb except you would move the hand and foot on opposite sides of the body instead of moving the hand and foot on the same side. Which technique you choose depends on personal preference or your sense of balance on a given surface.

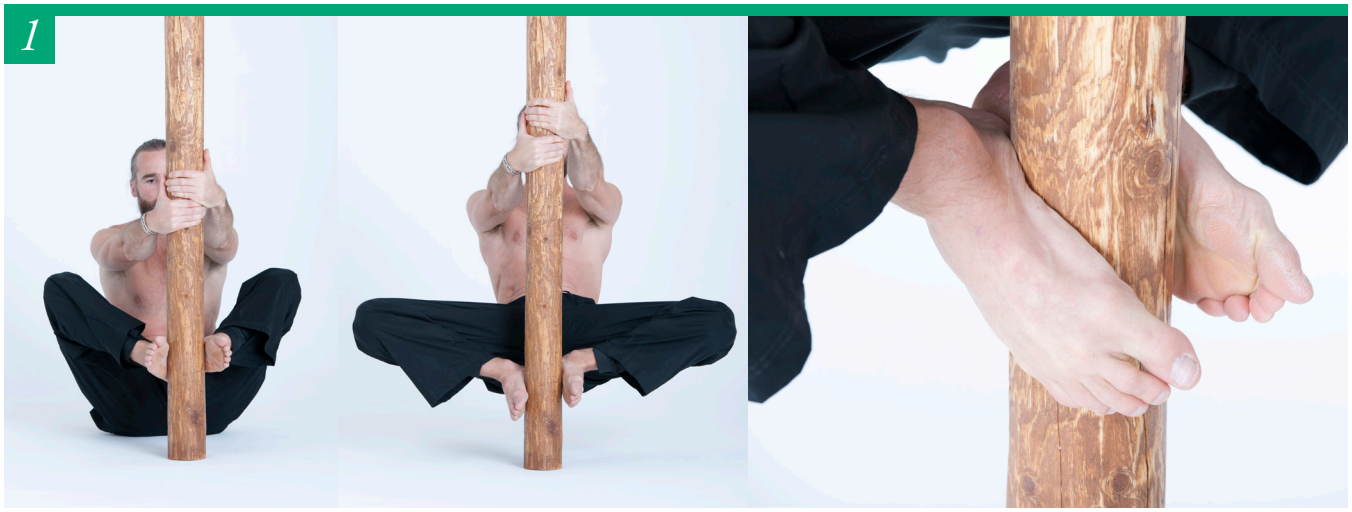
For the sake of adaptability and optimum efficiency, positions and patterns should be modified at will. For instance, a 4-2 pattern can switch to 4-3 pattern, a 4-2 ipsilateral pattern can become a 4-2 contralateral pattern, or vice versa. You can switch the position of one or both feet from upward and vertically centered to an angle at any time. Any of the Foot-Hand or Foot-Pinch Hang variations shown before could be used at any point to restore balance, handle a challenging surface, or rest the body by holding a stationary position or using a different movement pattern that employs different muscles.

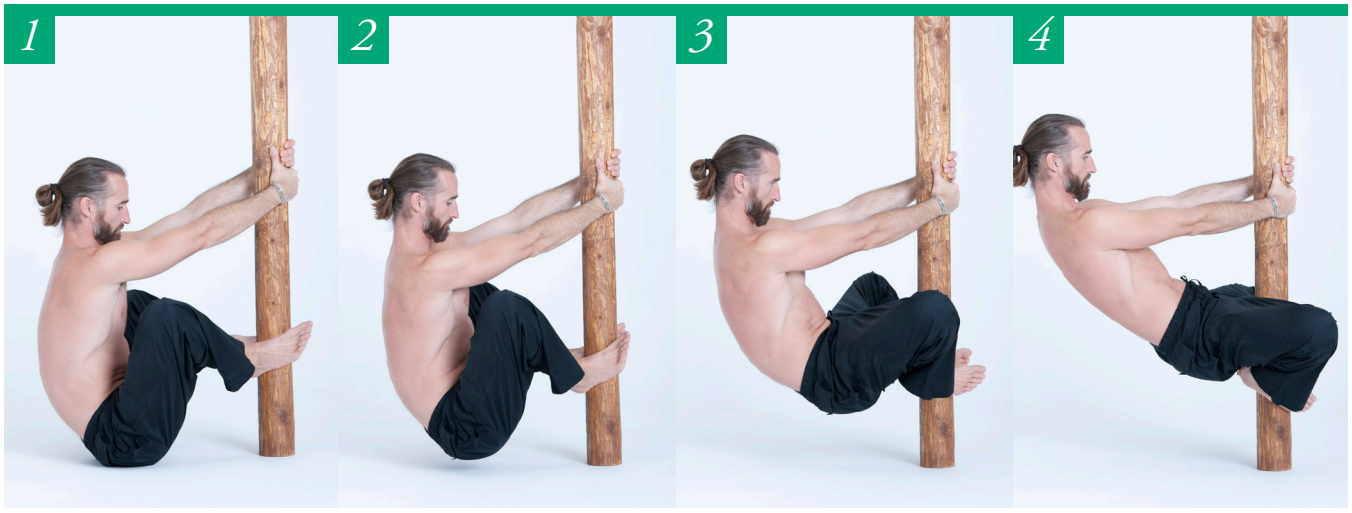
Foot-Pinch Hang Drill

The Foot-Pinch Hang technique involves a low, relatively vertical position in which most of your body weight is supported by your feet and minimal effort is required from your arms and upper body. Although this position can be held for a relatively long time while conserving strength and energy of the upper body, it's also quite technical and requires great hip mobility to be held efficiently. A benefit of practicing the position is improving range of motion in the hips.

The strength of the position relies on opposite forces applied perpendicularly to the vertical supporting surface. To maximize and maintain such opposite forces, your knees must lower to reach horizontal (or nearly horizontal) alig e position either to a downward slide of the feet and extension of the body or to bringing both legs in against the surface in a squeeze to maintain a position at the same height, which is not very sustainable.

There's a relationship between the type of surface and the level of friction that can be generated, regardless of positional control. (Of course, that's the case with any natural movement.) Also, the thicker the surface becomes, the more challenging it is to hold the Foot-Pinch Hang. In any case, there's no point at all in attempting the Foot-Pinch Climb if you haven't mastered the Foot-Pinch Hang so that it's strong, steady, and reliable.





1. Start in a Bent Sit with your feet above ground and level on the surface. Bring your hands together on the surface at head level or slightly above.
2. Pull from the shoulder girdle/scapula to elevate your center of gravity and your rear off the ground.
3. Open your hips and legs to lower your knees, which results in a modified position of your feet, your hips shifted forward, and your upper body slightly leaning backward.
4. If your mobility allows, reach the most efficient and stable position by increasing the range of motion in your hips and lowering your knees the lowest you can, which keeps shifting your hips closer to your feet. The lower your knees (but don't let them go below foot level) and the greater the space between your knees, the more frictional force in your feet.

Front Swing Traverse

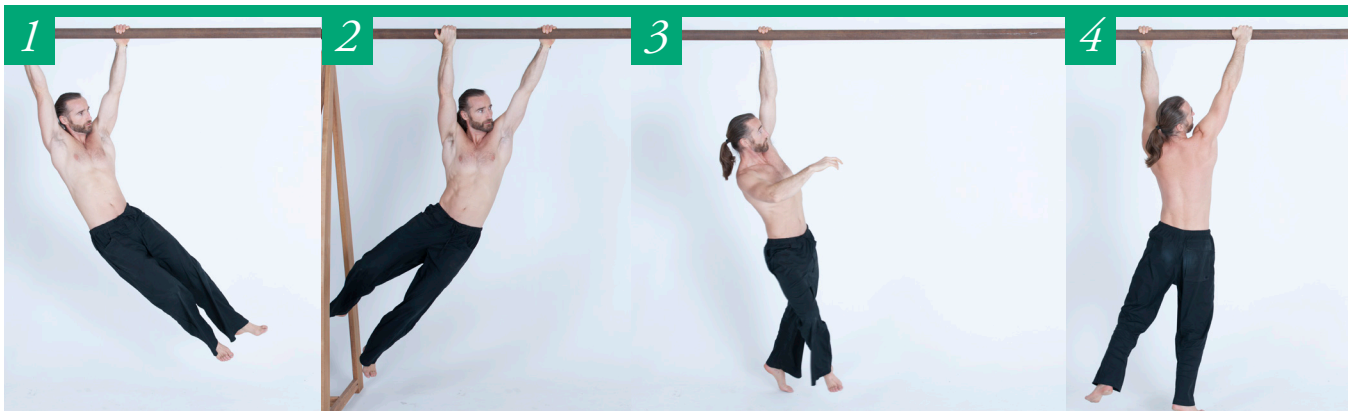
This version of the swing traverse is done in a front Double-Hand Hang with the body perpendicular to the surface of support. It's more demanding—both technically and in terms of grip strength—than the Side Swing Traverse for two reasons:

- The rear hand must travel further and past the front hand, so the duration during which all body weight is supported by a single hand is longer.
- The body's orientation rotates at a side angle each time the rear hand travels forward.

If you lose your grip, which usually happens when the body leans backward at the end of the swing, you fall on your back immediately with zero chance of recovery. You can use this technique as you move forward and reach to parallel supporting surfaces (as on the structure we commonly refer to as monkey bars). However, in the real world such structures are rare except on playgrounds; you're much more likely to encounter a single, long surface of support.

TECHNIQUE TIP

The Front Swing is involved in this technique, so you first should learn that movement as a separate drill. The Front Swing is useful for efficiently transitioning to arm-leg hangs.



1 Begin in a Double-Hand Front Hang with a base a little wider than shoulder width. Your palms should face toward each other. Initiate a Front Swing by driving your hips and legs to the front, which makes your body position lean backward. You can bend your knees slightly and swing your feet forward to help initiate the swing before raising your hips. If needed, you may accentuate the forward swing by pulling down with your front arm (or the backward swing by pulling down with your rear arm), but it's best to let the lower body generate the swinging momentum. Release tension in your oblique muscles to let gravity pull your body back down, which initiates the back swing.

2 As you enter the last backward swing before you release your hand, rotate your hips to orient your body similarly to a Side Hang, which adds momentum upon release and helps the rotation of your body to the opposite orientation.

3 Get ready to apply even more grip strength to your front hand as you release your rear hand just when your body is about to swing back forward. This immediately accelerates and amplifies the forward swing as your base of support suddenly shifts forward, while your center of gravity is high at the back, which pulls your center of gravity down and forward very swiftly.

4 As you're swinging forward, rotate your hips to orient your body in the opposite direction, extend your free arm to bring your rear hand to the front in a Wide-Base Double-Hand Front Hang. Resume swinging immediately and repeat the sequence to move forward.

Faults

- Generating the swing by pulling down with the arms
- Leading and disrupting the sequence through the arms
- Generating too little swing amplitude if you intend to reach far forward
- Using no hip rotation, which results in losing balance and your travelling hand missing the supporting surface

Side Power Traverse

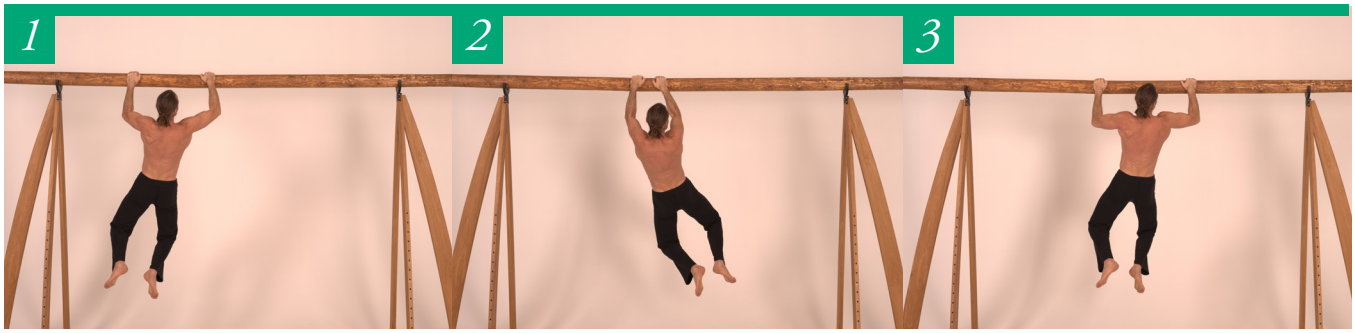
The Side Power Traverse relies exclusively on upper-body power, with no swing momentum, which means this traverse expends more energy. You use this movement when the situation requires explosive movement, if gripping friction is challenged because of the supporting surface, or because you're carrying an extra load. People who lack upper-body strength can't do the Side Power Traverse, or they can do it only for very short distances before they're forced to extend their arms.

The half flexion of the arms in this movement is not as demanding as a Pull-Up, although it's similar, which makes it a great way to start developing strength for full Pull-Ups. The degree of flexion may vary, and a greater flexion may help secure your grip.

Because the trail hand can't cross ahead of the front hand, it can travel only as far as the front hand in a hand-shuffling motion, so the trail and front hand don't alternate. The difficulty level of the Side Power Traverse also relates to the width of your base of support and the length of your arm movement.

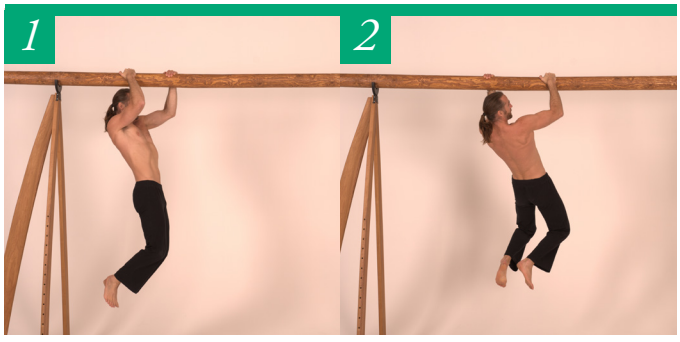
TECHNIQUE TIP

You can reverse your body orientation with each arm movement, which demands a change in grip position and a rotation during the forward travel phase and arm movement.



1. Begin in a Double-Hand Side Hang and pull yourself up until your elbows are bent at about 90 degrees.
2. Shift your body weight toward your forward hand until you can release your trailing hand to quickly place it next to your lead hand. Your hold now has a narrow base.
3. Shift your body weight onto your trailing hand to enable the release of your lead hand and replace it on the bar forward enough to maintain a 90-degree bend in your elbows.

Front Power Traverse



You do the Front Power Traverse when you're perpendicular to the surface of support. It's usually performed by alternating the trail and front hands, so the rear hand travels forward past the front hand, which enables you to cover about twice the distance of the Side Power Traverse per arm movement. You also can perform it with shuffling movements (the trail and front hands don't alternate) similarly to the Side Power Traverse.

Faults

1 Elbows should bend only after you release the grip of the trail arm, so you can move it upward (so the arm is not pulling). Pulling on your arms is unnecessary unless you need to do it to ensure gripping friction, or if the supporting surface is at an angle that's relatively significant. Otherwise pulling is a waste of energy. If you lack grip strength, you might want to hook your arms instead of gripping with your hands.

Hybrid Sliding Forearm Swing-Up

The Hybrid Sliding Forearm Swing-Up is an excellent option for women because it avoids the situation of creating sliding friction across the breasts. This swing-up starts in a regular Double-Forearm, Single-Leg-Hook Hang. Initiate a Forearm Swing-Up, and as soon as your chest or breast has cleared the supporting surface, lean toward the outside arm (opposite to the hooked leg) and let it slide off so you're supported by the armpit, while your opposite arm and hooked leg push your body to extend along the supporting surface. The movement ends in a balancing position that mixes a Single-Leg-Hook with a Single-Armpit, Single-Hand Hang. From there, you can transition to higher balancing positions.

Hand Swing Up

The Hand Swing-Up is the fastest of the swing-up variations, but it starts in a lower hang position to elevate to the highest balancing position, which demands more upper-body power.

1. Begin in a Side Hang.
2. Lift your free leg all the way up while keeping your arms fully extended.
3. As the momentum elevates your hips, strongly pull upward from both arms. Reach full arm flexion.

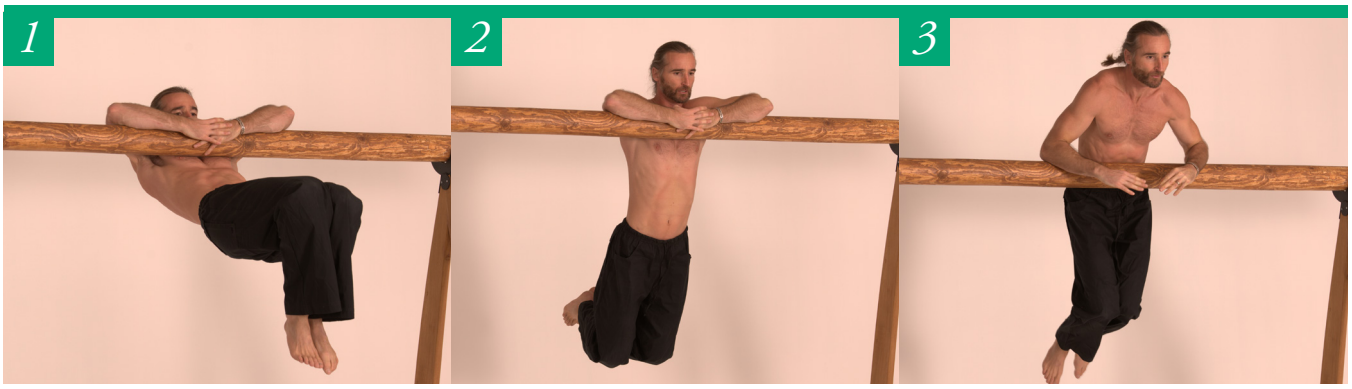
4 Internally rotate your arms to lift both elbows up and transition from a pulling to a pushing effort. Lean your head and upper body forward as much as possible. Slightly lift your free leg up and forward to help balance.

5 Reach the supporting surface with your belly as you start extending your arms.

6 Press up on your arms to elevate your belly above the supporting surface and bring your torso to an erect position. From there you may transition to a Tripod Get-Up or Straddle Sit.

Swing Pop-Up

To do a Swing Pop-Up, you use a Front Swing to generate momentum that elevates your body before the forearm pull. This option is a bit more economical compared to the Tuck Pop-Up, but generating the swinging momentum takes a little extra time. The Swing Pop-Up requires impeccable positional control and timing to be done efficiently. People who have a hard time maintaining a stable hang under swinging momentum won't be able to manage this movement.



1. Begin in a Double-Forearm Hang and initiate a Front Swing.
2. Wait until your body swings backward and reaches its peak elevation at the back.
3. Initiate the Forearm Pull-Up to pop up to the top, transferring the upward body-weight momentum into your pull to reach the top position.

Faults

The two most common faults are

- Improper positioning of the forearms on the surface of support that prevents the efficient transfer of momentum and decreases your ability to generate upper body power.
- Pulling too early in a forward direction before reaching enough elevation in the back swing, you will bang your chest on the surface of support and fall back into a low Double-Forearm Hang.

TRUE STORY

I once had the privilege to train several members of the Navy Special Warfare Command (Navy SEALS). One of the most intimidating obstacles of their obstacle course is called the "Dirty Name" for a reason: Novice trainees often fail to pass it or hurt themselves while they try, so they insult the obstacle with dirty names out of anger and frustration.

The obstacle is made of three elephantine horizontal bars set a few feet apart and at increasing height. You would have to be a very powerful jumper to be able to jump from one to the other and stay on your feet. Most people who pass it successfully do so by jumping from one bar to land on the next in a Forearm Hang, which is less than optimum and has great potential for injury. (As a matter of fact, some people break ribs this way.) Usually, when you end up in that position, you just let go, jump down, and try again. I was able to show the team the Pop-Up technique as an effective way to get back on top of the bar from the Forearm Hang position without having to climb down and re-attempt the whole obstacle. It was a welcome implementation of a MovNat technique to their training, which is highly demanding in practical physical competence.

Power-Up

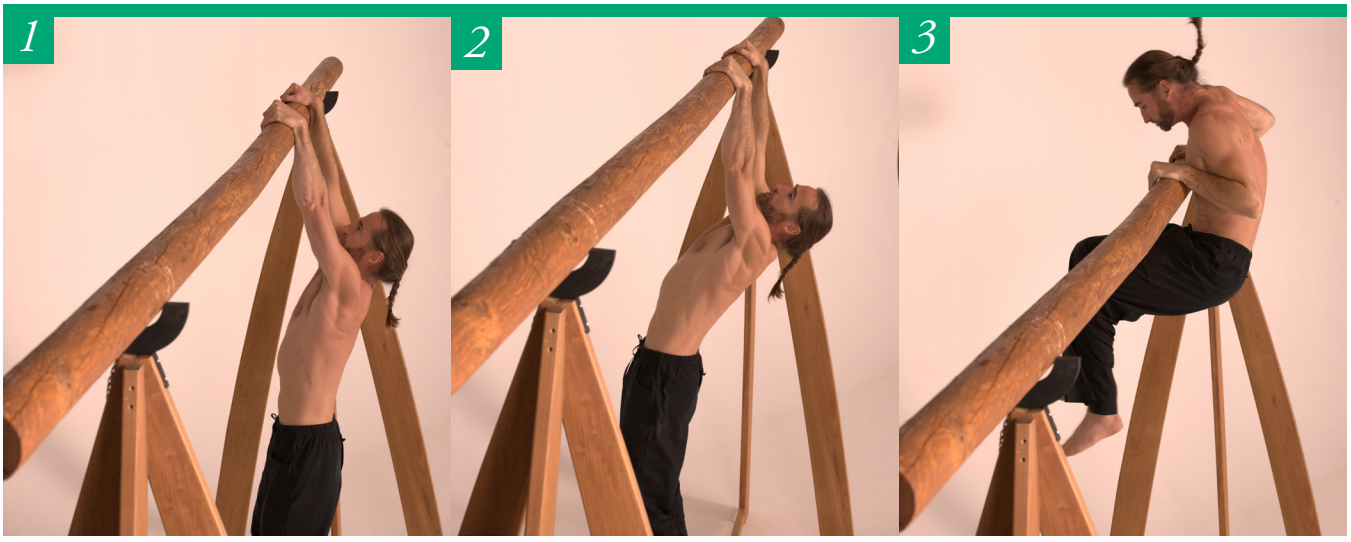
The Power-Up is a highly explosive upward pull from a Double-Hand Side Hang, which you use to climb up very swiftly in case of an emergency. Many people familiar call this movement the Muscle-Up. Whereas all climbing movements involve your muscles, what you really need for succeeding at this movement and to establish the top position is plain power.

If you lack the power required, either because you haven't developed it yet or because you are fatigued or you're wearing a backpack, you may revert to some of the easier climbing strategies you've already learned in this chapter.

Although the Power-Up mostly relies on upper-body pulling power, technique is absolutely involved to some degree; however, I feel it's necessary to state again that technique is not a valid substitute for insufficient power. Such power is developed through explosive Pull-Ups with the goal of reaching the highest body elevation possible (called the High Double-Hand Hang). Ultimately, as you become able to pull your body up fast and high—with the sternum reaching the level of your hands—you will reach the position where you can transition from a pulling action to a pressing action.

A lack of grip strength is also a concern, particularly when you're hanging on thick surfaces with an Open Hand grip. You also must have enough shoulder and wrist mobility to do it on an immovable supporting surface. Beginners should start with a surface like a regular pull-up bar using a Hook Grip rather than an Open-Hand Grip.

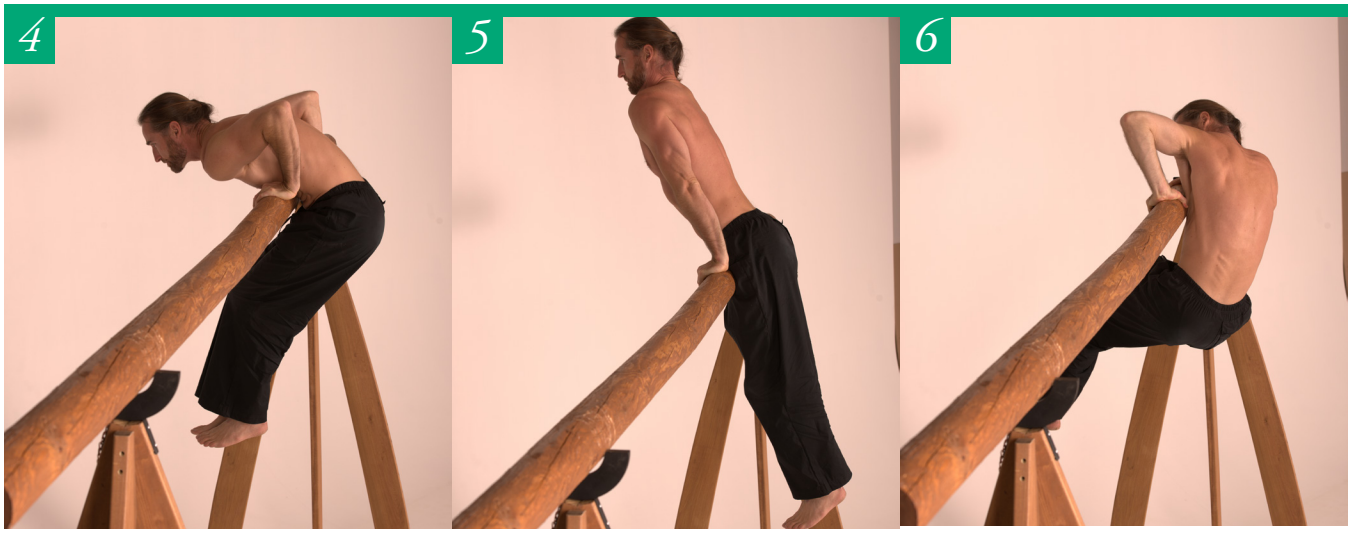
This movement uses a tuck motion rather than a Front Swing as in the Pop-Up because in most cases the thickness of real-world surfaces makes such an option unsafe when combined with horizontal momentum. If gripping friction is a concern, the last thing you want is your body weight to pull you forward toward the opposite side where your hands are hanging from. Although this works with a secure Hook Grip, it's unsustainable with an Open-Hand Grip on a thick surface. Also, the Front Swing takes a bit of time, which reduces the advantage of the Power-Up as the fastest option available.



1 Start in a Double-Hand Hang with an Open-Hand Grip with your palms as far forward and above the surface of support as possible. This enables you to transition directly to a pushing motion at the end of the pulling motion. However, this modified Open-Hand Grip requires specific forearm tension and wrist mobility to create frictional force.

2 Alternatively, start in a regular Open-Hand Grip with your palms against the surface of support below its top surface.

3 Start a knee tuck similar to the Tuck Pop-Up to initiate upward momentum and immediately explode upward into a powerful pull until you reach full arm flexion Alternatively, a front swing may help create a backward swing that can also contribute to upward momentum, as long as the motion doesn't challenge your grip, especially if the supporting surface is thick or slippery. Aim at pulling your chest as close to the supporting surface as you can, with your head leaning forward above it. Unless you started in a hang with your palms already on top of the supporting surface or in a Hook Grip, you must slide your hands forward toward the end of the pull, so that your palms can reach the top surface and be ready to transition to a pressing motion. (See the Technique Tip at the end of the steps for more information.)



4 As the momentum keeps elevating your body position, keep pulling your upper body in a forward lean, which also elevates your elbows and places them in optimum vertical alignment with your palms and the supporting surface. You've reached a balanced top position. If you don't have any upward momentum left, you need to stabilize strongly in this position to prevent gravity from pulling you back and down.

5 Press on your arms to reach a Vertical Hand Press position. This movement is conventionally known as the "dip." If you've generated and conserved momentum all the way to this stage, pressing up is easy and fast. In any case, you must possess the strength to vertically press up from the bottom of the top position even in the total absence of momentum.

6 An alternative method for reaching the top position is to elevate a single arm into a pressing position before the other arm can follow, which aims at compensating for a lack of power with greater range of motion. But it demands greater shoulder mobility and stability, and it's easy to lose balance forward.

TECHNIQUE TIP

Step 3 is highly critical as you may not have much power and velocity left, and gravity keeps pulling you backward and down as you try to transition to the press position. This phase can be helped with two drills:

- Slow press to pull descent (also called negatives): Start at the bottom of the Vertical Press-Up position and transition to the High Raised Double-Hand Hang and lower yourself all the way down as slowly as possible.
- Do the same as above except that you immediately pull yourself back to the bottom position of the Vertical Press-Up directly from the High Double-Hand Hang.

Faults

If you possess enough power but still find yourself ineffective, it could have to do with positional control at the beginning or end of the pull.

- If you pull yourself under the supporting surface with your chest pointing toward it, your momentum is stopped the moment your chest bumps against the bottom side of the supporting surface.
- Your hands are too low on the supporting surface (as in the photo) and you haven't pulled them forward. You can't keep pulling your upper body forward as your hands are pushing you back. Even if you manage to elevate your elbows to a press position, they'll be vertically aligned with your wrists at the back of your palms and off the supporting surface, placing enormous stress on your wrist joints and preventing you from applying effective pressing strength. Depending on the support surface, different grip positioning options may be available. As a rule of thumb, you want to systematically choose the grip that gives you the most powerful pull, not the better push position. Indeed, once you have generated the most power thanks to a strong grip and pull, you can reposition your hands in midair—when the pull is very powerful, you're almost getting airborne. Even if your hands stay connected to the support surface at all times, they might not bear any body weight between the peak of the pull and the shifting of body weight back onto the hands in the press phase of the Power-Up.

- The hand-elbow position is good, but you aren't leaning and pressing forward. Because your center of gravity is behind your base of support, gravity pulls you back down before you can reach full arm extension and a balanced top position.

Roll-Up

The Roll-Up is a technique that makes you go feet first in an inverted hang on the side opposite to where you hang, until you can topple back in a Vertical Hand Press on top of the supporting surface. Voilà! It's quite challenging until you've developed enough strength and technique to achieve it in such a smooth motion that it almost feels effortless. However, it's more economical than the Power-Up. I frequently see people who can't perform a Power-Up but have no problem doing a Roll-Up, so it's a convenient option and alternative to achieve a strictly similar result—a transition from Double-Hand Side Hang to Vertical Hand Press—in a completely different way.

You can do the Roll-Up on a narrow horizontal surface as well as on a flat, elevated platform type of surface. People who can do it on narrow grip surfaces are reluctant to attempt it when the surface of support is rounded and thick or flat at the top, which is understandable because you put yourself in an inverted vertical position, relying on your hands to not slip and cause you to fall down head or back first. Clearly, this is not the best practical option if you lack gripping friction because of the risk of losing grip and falling.

A preparatory movement to the Roll-Up involves driving the legs and hips through the arms below the base and surface of support. This movement helps beginners develop shoulder mobility and develop confidence in inverting their hang position.

1. From a Double-Hand Hang, pull your position to a lean at a back angle with your arms extended and tuck your knees upward with your feet passing to the front of the supporting surface on the side opposite of your hands.
2. Continue pulling yourself to a horizontal position by driving your hips forward and elevating them to shoulder level. Extend both legs up on the other side of the supporting surface in about a 45-degree hip angle between your legs and trunk.
3. While maintaining the 45-degree angle at the hips, pull down on both arms to elevate your hips to the supporting surface. Your upper thighs are resting on the surface as you continue to invert your hang.

4 You're reaching the key sequence where the upward momentum produced in your hips and legs combined with the downward momentum of your upper body leaning down to a vertically inverted position allows your hip bone to reach an elevation where your legs can topple back to the same side as your hands. Body weight is resting either statically in this position or it keeps spinning around the supporting surface through momentum. If you've reached this position but have become short of momentum, you still can recover and establish a position on top.

5 If you haven't reached this position thanks to momentum, you can reach it by pulling on your arms to slide your hips backward to shift your center of gravity to a more balanced position, resting on your belly or just above the hips.

6 Swiftly tilt your head back and pull your trunk up to counterbalance and pivot around your axis efficiently to make your position vertical, unless you've reached this position through continuous momentum. This recovery move can be done also from the previous position if the hip was positioned sufficiently backward on the supporting surface.

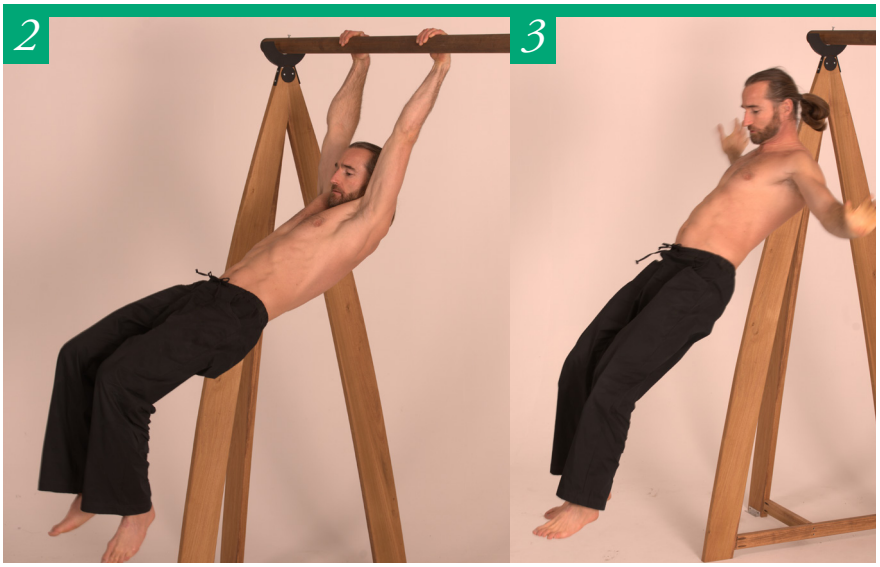
Front Swing Takeoff

The Front Swing Jump is a form of airborne movement where the launching is done from a hang, which belong to the climbing category. The trajectory depends on the body position and the velocity of the swing at the crucial moment of the hand release. It's a great skill-mix and climbing exit in some situations where climbing down is difficult, impossible, or would just take too long. You even can use it to land in a climbing position again!

1 Generate a Front Swing with the amplitude necessary to reach the distance you want.

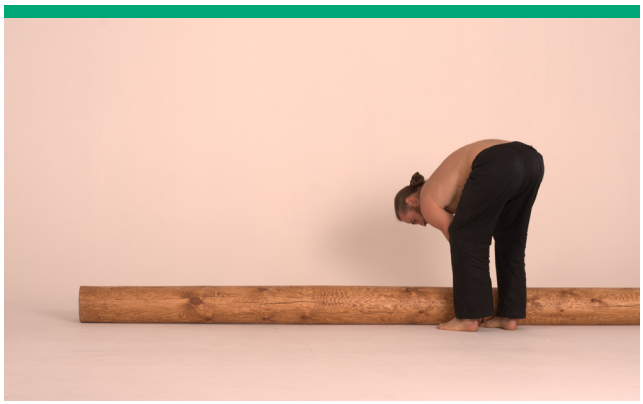
2 Reach the speed and angle for your airborne trajectory to reach where you intend to land and release your hands to become airborne.

3 While airborne, keep focusing on where you intend to land while controlling your position. Bring your arms from the back to the front to prepare for landing.



Removed from Chapter 30, Manipulation Movement 1 (i.e. from pages 425 - 460 in *The Practice of Natural Movement* book).

Log Lifting/Carrying



I have chosen the log to explain some techniques, including the Clean and Jerk. The log comes in diverse lengths, thicknesses, and weights and represents a unique manipulative challenge. As a training tool for manipulation, it presents both advantages and downsides. I'm not talking about the logs used for strongman training; those logs are modified with narrow handles inserted inside the wood around the center to facilitate grip and enable movements otherwise impossible to perform with a log. I'm referring to regular lumber logs, dead tree trunks found in the woods, or any long and narrow object or load.

Lumber logs are relatively cheap (it's easier to find logs in the countryside than in cities) and can take a lot of abuse. To be able to manipulate a log safely, you need a decent amount of space around and above you. You can roll, drag, raise, flip, tumble, shoulder, carry, and even float and push a log. You can use them solo, but they are wonderful, versatile tools for cooperative practice. In addition to using logs for manipulation, you can use them for balancing, jumping, or even climbing.

When left outside, logs are exposed to bad weather and can become wet, muddy, or icy, lowering surface friction and making them harder to work with.

You can only estimate the weight of any log by looking at it or by deadlifting one extremity of the log. Depending on the feel you get when deadlifting the log, you might expect it to feel at least twice as heavy when it's resting on your shoulder. In any case, progressions in intensity are a result of guesswork that tells you "heavier" or "lighter," but you never know an accurate weight.

Training lifting techniques with logs is somewhat different than training with other objects because one extremity of the log is resting on the ground until you shoulder it; when you deadlift, clean, or jerk a log, it's a partial lift in the sense that you're not lifting the totality of the load. Of course, you don't have to start learning with a log to learn complex movements such as the Clean and Jerk. A medicine ball, kettlebell, Olympic bar, sandbag, or any odd object will do. Lifting such props is more demanding in the sense that the loads are entirely off the ground, and there's little room for error. Inefficient position and management of the combined center of gravity rapidly turn into dropping the object. On the other hand, the fact that one end of the log remains on the ground until you shoulder it prevents the forward or backward motion of the combined center of gravity, which is a great advantage when you hold the log overhead. However, the downside is that when the log is centered overhead with a very narrow arm stance, you must work much harder to stabilize to prevent side motions of the combined center of gravity than you do with other objects.

Log Deadlift—Split Stance Variation

Just like any other manipulative prop, lifting logs demands impeccable technique from the moment you contact and grasp the log. I've seen numerous people attempting to lift a log from the middle when I ask them to shoulder without giving them any instruction (be assured that I immediately stop them before they attempt to lift anything). The main mechanics of deadlifting a log efficiently are no different than with any other object, but there are particularities I have to explain.

First, in the absence of handles, you must position yourself at one extremity of the log if you want to be able to grip it effectively. You can place your open hands on the sides of the log end (facing each other) or to the very front of the extremity of the log where it's usually flat. In the latter hand positioning, the sharp edges help with gripping friction but can be hard on the hands at the same time. You may even use a mixed grip with one hand to the front and the other to the side of the log end.

You have the option to deadlift the log either in a square or split stance. If you choose the square stance, it's important to position your feet on both sides of the log end and center your grip horizontally with your heels rather than your middle of your feet, to account for the fact that as you raise the log at an angle, the other end tends to move forward slightly. Otherwise, as you reach the top position of your deadlift, you end up with your grip away from your waist and must adjust your combined center of gravity by stepping forward. If you're going to pause in a Waist Carry position, you need to engage with the log and stay up close and personal with it: Press your waist against the extremity of the log and allow your body to slightly lean backward. Drive your hips slightly forward to help rest the log and maintain a secure grip (as shown in the next photo).

An alternative Split Squat Deadlift option is useful when a regular square stance is not as stable (usually when the terrain where you stand isn't stable). The Split Squat Deadlift leverages the fact that the extremity opposite to where you grasp the log rests

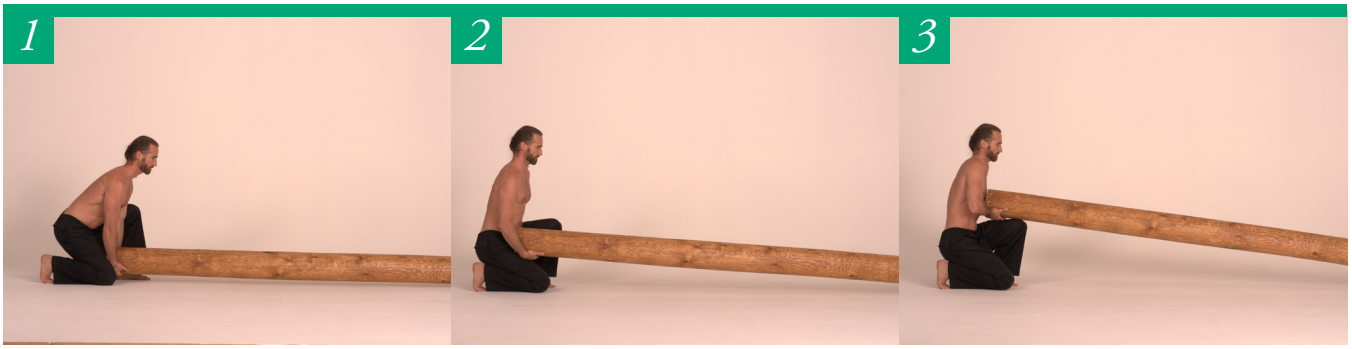
steadily on the ground (assuming, of course, that the end doesn't slide forward) as you can "push forward" with your body to assist the stability of your lift. If the resting end of the log was to slide forward, you're in a standing stance that enables you to quickly step forward and, in most cases, save your lift.

1. Start in a Half-Kneeling or Deep Split Squat position, with the grip positioning you feel is the most reliable.
2. As you start pushing off your feet to elevate the end of the log, immediately drive your hips forward while exerting forward force through your hands and arms, which enables you to bring your center of gravity forward the closest to your grip early and to demand more effort from your legs than from your lower back.. For that purpose, your hands could be placed more to the front than the sides.
3. When you reach hip lockout, your waist presses against the extremity of the log to help support it so you can secure your grip before stepping forward.

Log Lapping

Logs have to be lapped when they're wet, muddy, and too heavy for a regular hand grip to be effective. Instead of grasping with the hands, you can slide your forearms in below the extremity of the log to avoid slippage, lift the log, and then rest it on your thighs before standing in a forearm hold as shown in the next photos. Later I describe how to transition to the Rack from this position when I discuss the Clean technique.

An alternative log-lapping technique involves raising the extremity of the log in a step-by-step fashion.



1. Start in a Half-Kneeling position.
2. Lift and raise the extremity of the log enough to slide your knee forward underneath it to let it rest on your upper thigh.
3. Secure a strong grip and use arm strength to lift it again and shift it toward the opposite leg; let the log rest on that leg.

4. Start getting up with the log resting on your thigh; press strongly against the log with the side of your abdomen. If the log is really heavy or challenging your grip, you may mark a short pause to slide your forearms deeper to better support the load.
5. Finish in a split stance and center the load as you keep pressing against it to support your hold.

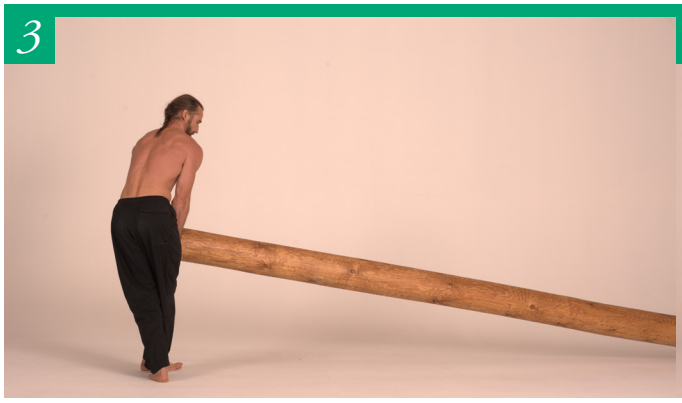
Once you've established the Waist Hold, you might have to move the log around its resting base to change its orientation. You do this with the same Waist Hold, which is a front position, or you may switch to a side position instead; you may also modify your hold before you move the log (see photo examples). A side position enables you to rotate the orientation of the log by walking forward, whereas in a front position you must shuffle sideways.

SAFETY NOTE

With any kind of Side Walk under load, it imperative that you shuffle and never cross-step. The reason is that a cross-step involves rotation of the lower spine, and the compressive force of the load significantly increases the likeliness of a lower spine disk injury. Make it a habit of never cross-stepping under load.

1 Waist Hold, Side Shuffle Walk

2 Shoulder Hold, Side Shuffle Walk



3 Overarm Hold, regular walk

4 Underarm Hold, regular walk

Dragging

With a sufficiently strong hold and grip, such as an Underarm Hold, you can drag a log backward. The main strategy is to lean backward to place the body at the best push (lower body) and pull (upper body) angle, but you also add your body weight to battle inertia. The critical moment of the drag is overcoming inertia and initiating momentum. Once you've gained momentum, dragging is easier, and you want to do everything you can to maintain momentum; otherwise, with every pause, you have to go through the same process to overcome inertia again.

The friction in the grounded extremity of the log will oppose friction in your feet. If the ground has low frictional conditions, say frozen ground, it reduces friction in the log, which is good, but it equally reduces friction in your feet, which is not. If the terrain is uneven, friction increases at the log extremity and makes it difficult to regain momentum; you may Side Shuffle and find anything on the ground (a bump or immovable rock) to help you push stronger without foot slippage.

Did I say this is a BIG no-no?

Hang Clean

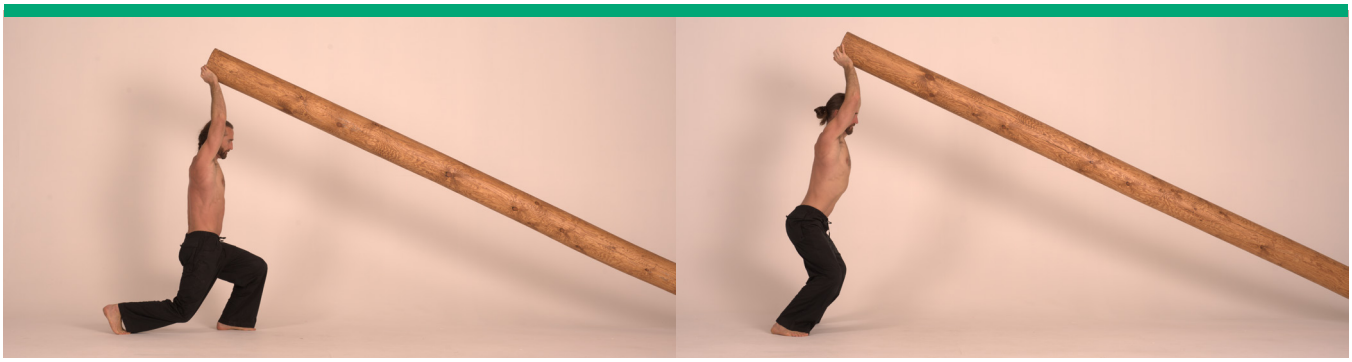
After lapping, you may find yourself in a Forearm Hold (as shown in the following photo), from which it seems impossible to jerk the object to the Overhead Hold. It would be possible only if the load is relatively light. The solution is a short-range Clean, which is also known as a Hang Clean, which enables a transition to the shoulder-level Rack.

From a stand with a Forearm Hold, you lower your center of gravity with a dip, which means that you slightly bend at the knees to contract and load your legs while keeping your position vertical. From there, the movement resembles a regular Clean that starts with a triple extension from a taller position. Immediately shrug your shoulders and lift your arms to the small extent it's possible with that hold. To compensate for the fact that less force and vertical velocity can be generated than in a regular Clean with the load starting from the ground, moving quickly on your feet and swiftly lowering your center of gravity to catch the load in the Rack in a Deep Squat has great importance.

Jerk Variations

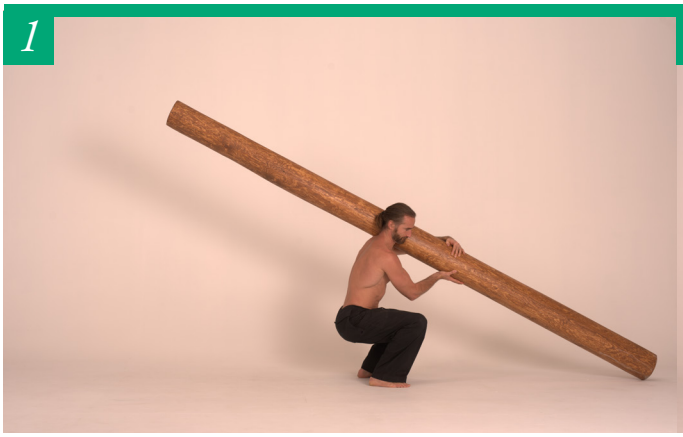
The Side Rack Jerk is a variation that starts with the log in a Rack hold that is in part supported by one shoulder (photos 3 and 4 in the preceding set), which happens if at any moment while moving down the length of the log you have to lower the log from overhead to Rack before you jerk it overhead again.

The Switch Jerk is a partial Jerk that enables you to switch sides in a Side Shoulder Carry. It starts with the log fully off the ground and balanced on one shoulder in a Side Rack. Upon "bumping" the log up to slightly elevate the log, you lower your body just enough for the log to pass right above your head and your arms to move it and smoothly lower it onto the opposite shoulder. Depending on how heavy the log is, you may keep bending at the knees after the object contacts your shoulder to ensure an even smoother change of side, which is much more efficient than trying to Press (or even Push-Press) the log to switch sides.

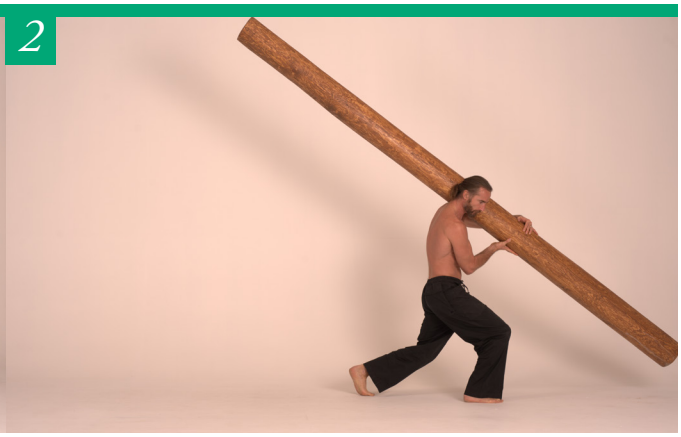


Inefficiencies of Log Shouldering (i.e. from page 455 in *The Practice of Natural Movement* book).

Faults

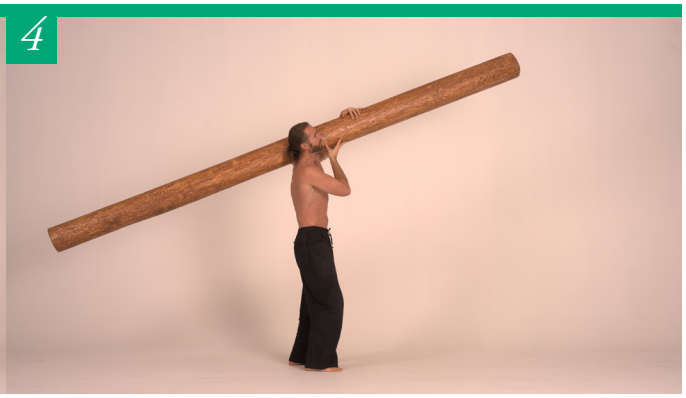


1 The center of gravity of the log is way below the front of the shoulder. The front part of the log won't elevate, or it might start sliding forward.



2 You forcefully try to pull the log upward, which compromises the position.

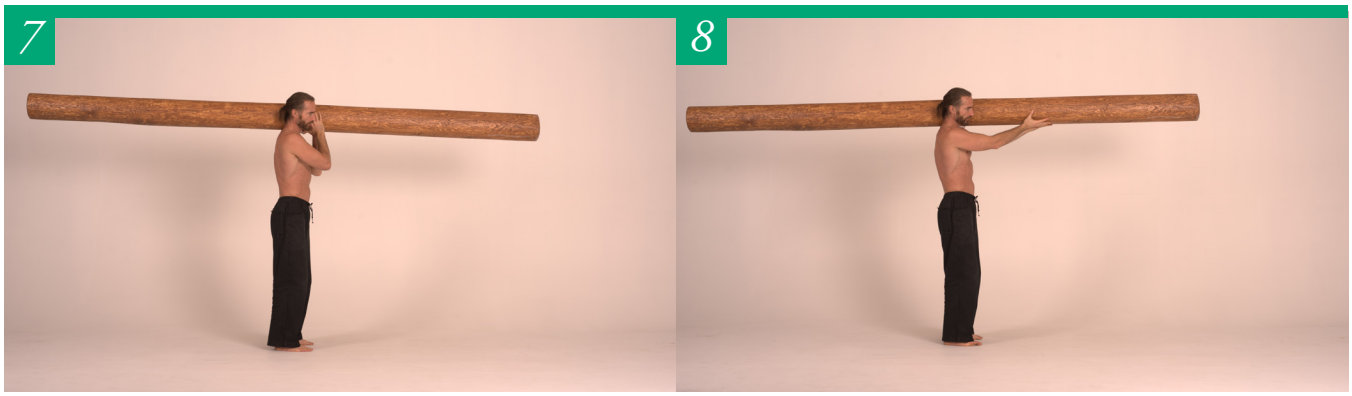
3 The front part of the log tilts down, forcing you to have a rounded back and to keep pressing up hard with your arms.



4 The front part of the log tilts up, forcing the overarm to press down hard, with a high risk of losing balance backward.

5 The side lean is too pronounced and unsustainable, which might injure the lower back.

6 The rotation of the torso in relation to the pelvis is twisting the lower spine, which should be avoided when carrying anything. When the spine is compressed under load, its ability to rotate around its axis is greatly reduced, so the position shown is a high-risk position that's very likely to injure the lumbar area. If you add a pronounced side lean, you're bound to injure your lower back very badly.

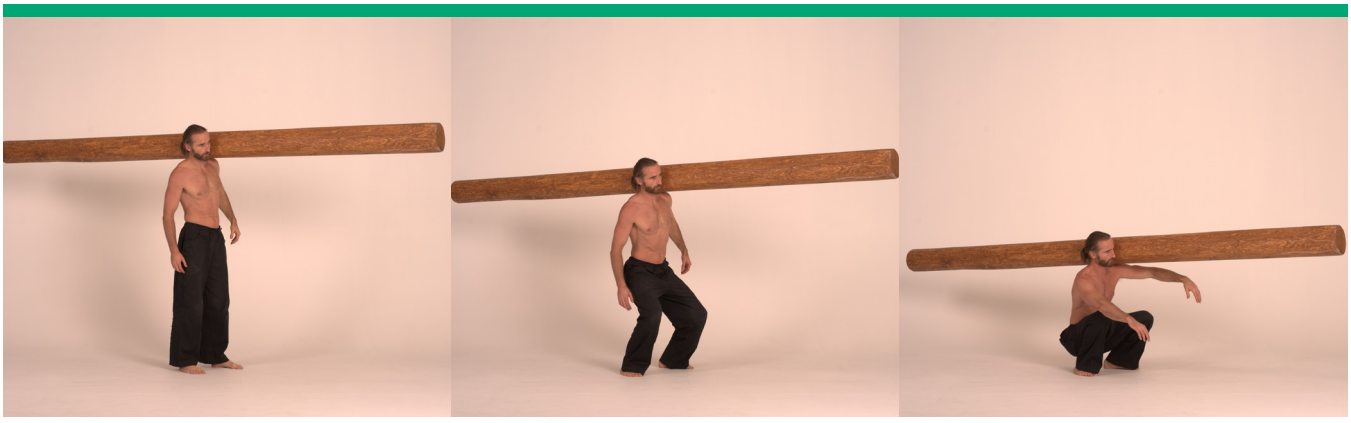


7-8 Keeping a rack hold or extending your arms to the front won't help you balance the log efficiently and will tire your arms rapidly. Either your combined center of gravity is inefficient, and you need to fix it, or you just need to relax your arms.

No-Arm Single-Shoulder Carry Squat Get-Up Drill

This drill is a great demonstration of efficient combined center of gravity because, if you can establish it optimally, you should be able to release both hands while balancing the log with minimal sway and positional adjustments. Because you're not using an arm to prevent the log from rolling off your shoulder, shrug the load-bearing shoulder.

When you can balance the log without using your arms, get down to a Deep Squat and then get back up and even move forward, backward, or sideways with it. Of course, the shape of the log plays a role in your success because it's more challenging to do this drill with thick, short logs and easier with thin, long ones (which is also relative to your individual body size).



Drills and Progressions

Now that you've learned practical lifting and carrying techniques, let's have a quick look at some additional drills for building skill, strength, power, or strength endurance. All the information provided so far should be enough to understand how to perform these drills, but I provide some reminders when needed.

- **Deadlift:** See the Deadlift description earlier in this chapter.
- **Squat Get-Up:** This is the loaded version of the Squat Get-Up (square stance) with the load held in diverse ways, either in the Rack (Front Squat), across your shoulders (Back Squat), on a single shoulder, or any other body hold (Overhead Hold, Hand-and-Head Hold, Lumbar Hold, and so on). The Chest Hold and Back Hold enable you to work with the greatest loads. The Squat Get-Up from a Split Stance also is a variation.
- **Clean:** Squat Clean (lowering the body to a Rack in a Deep Neutral Squat) or Split Clean (lowering the body to a Rack in a Deep Split Squat).
- **Power Clean:** Catching the Rack in a standing position with only a partial flexion of the knees.
- **Hang Clean:** See the Hang Clean description earlier in the book.
- **High Pull:** A shorter Clean sequence that ends at the moment the load reaches its maximum elevation.
- **Press:** Elevating the load from the Rack to an overhead lockout arm position using only upper-body strength.
- **Push Press:** Elevating the load from the Rack to an overhead lockout arm position by pushing off the legs and extending the arms.
- **Squat Push Press:** Same as a Push Press but starting in a Deep Squat.
- **Split Jerk:** See the earlier description of the Jerk.
- **Squat Jerk:** The body lowers to a Deep Squat instead of a Split Squat. This requires great levels of mobility, especially if the Rack is narrow.
- **Power Jerk:** Upon thrusting/jerking the load upward, the body (and thus the center of gravity) lowers in a partial Squat instead of a Deep Squat, and the load is caught overhead in a tall position.
- **Static Overhead Holds:** Holding an object overhead while in a stand, Deep Squat, Half Squat, Split Squat, Kneel, and so on.

The practice of such drills for skill requires mindful repetitions, done relatively slowly with loads that are light as you learn the technique. You can progress to more explosive drills with loads that aren't overly heavy as you refine your skills. Training for strength requires heavy loads, and training for power requires heavy loads lifted explosively, either as single repetitions or as sets of a few repetitions. You can do particular lifting drills to enhance specific performance in other movement skills. For instance, explosive Hang Cleans transfer to the Power Jump.

Overall, to progress in lifting you increase

- Volume by performing several repetitions of the same movement in a row.
- Intensity by lifting heavier loads to increase strength and lifting heavier loads more explosively to increase power. Lifting with a single arm also can help develop greater strength, power, or technique.
- Complexity by training with objects odd enough to challenge grip and combined center of gravity or lifting from diverse positions, including on challenging terrains.
- To progress in carrying techniques, you increase
- Volume by carrying over longer distances and for a longer time
- Intensity by carrying heavier loads or carrying them faster
- Complexity by carrying objects that are relatively challenging to hold, with an uneven weight distribution, on challenging terrains, or by mixing skills (carry while crawling, balancing, getting up and down, running, and so on)

SAFETY NOTE

Don't practice this drill with heavy logs. It's not about maximum weight at all—just about fully understanding how positional control rather than superfluous exertion of force ensures efficient combined center of gravity.

Cooperative Log Training

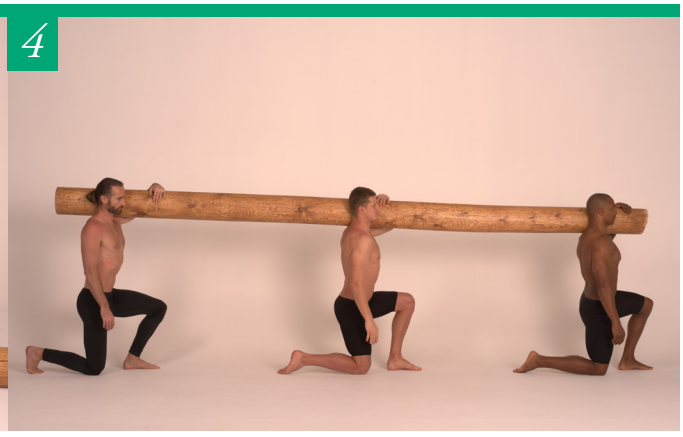
In the real world, people rarely find themselves isolated without any help from other people. Objects heavy enough to be hard for a person to lift alone can be lifted and carried in partnership. Except when no one else is around or when strength and skills are showed off in contests, the rest of the time there is no need to risk an injury or exhaust yourself unnecessarily when you can share loads and efforts for more economical, faster, and safer work. It doesn't mean that individual strength and skill matters less. There's no doubt that we're stronger collectively when we are individually. However, the collective work of strength is a skill that requires organization, coordination, and cooperative technique, which needs to be practiced. Lifting and carrying in partnership also gives every participant a chance to feel useful regardless of the amount of strength they bring.

This kind of training has its own risks—for instance, if one participant does something unexpected (stumbles and loses footing) and leaves others to suddenly handle an increased load or from a more awkward position. Even in the absence of such incidents, uncoordinated movement is the real issue, so planning the task from beginning to end—the strategy and route you'll take—and letting everyone know what to do is essential to working together effectively and safely. Following are some examples of cooperative, coordinated, synchronized lifting and carrying.

1 Hauling up

2 Dragging

3 Rolling



4 Lowering or elevating

Rescue and (Mutual) Assistance

An essential part of lifting and carrying in Natural Movement has to do with helping others in situations ranging from helping someone to pass an obstacle to rescuing people when they can't move, or can't move fast enough, which can be the case when they're injured, sick, exhausted, or just too slow. Some carrying methods involve some participation from the victims or persons you're helping, and others require no assistance from them.

The body drags and carries can be fun to practice. For instance, everyone knows the Shoulder Carry (also known as the Horse Carry) in which the person you're carrying sits on top of you with one leg on each shoulder (photo 1) or the Cradle-in-Arms Carry (photo 2).

Choosing the appropriate method to move a person depends on several variables, such as the nature of the issue or injury, the distance to be covered, the environment where the carry takes place, the size and strength of the carrier relative to the size and weight of the person being carried (if there is only a single carrier), the amount of time available, and the presence of danger. In the real world, and depending on the circumstances that caused a person to be unable to move, you might choose not to attempt to move a person at all and simply call for help. To prevent possible further damage, don't move a person with a potential spine injury unless there's an immediate, life-threatening danger, such as a fire with the risk of burning, explosion, or asphyxiation. Appropriate situational response and rescue techniques is a subject that goes beyond the scope of this book.

In this section, I address only one-person carries, where the body being carried starts at ground level and is progressively elevated higher on the rescuer or helper's body. Clearly, you must haul the person's body up onto your own body before you can carry them, which is especially challenging as people are heavy and lie on the ground without being able to participate at all, such as when they are unconscious. In this case, the strategy is to pull and lift the person on an elevated surface, or to a stand, ideally supporting them against a vertical surface if you can, and then you establish the carry position (see the photo earlier in this section). As with carrying objects, carrying a person higher on your body means freer movement for your legs, but it puts more stress on your back and challenges your balance more than carrying at a height that's closer to your center of gravity. Similarly to any loaded movement, carrying bodies must be done with a great emphasis on neutral spine and breath control.

Although some of these strategies can be intuitively improvised, such as drags, others must be learned, such as the Lumbar or Cross-Shoulder Wrap Carry (also known as the fireman carry). This kind of knowledge shouldn't not be reserved to rescue workers such as firefighters or people in the military; I believe it should be everyone's duty to learn these techniques.

TECHNIQUE TIP

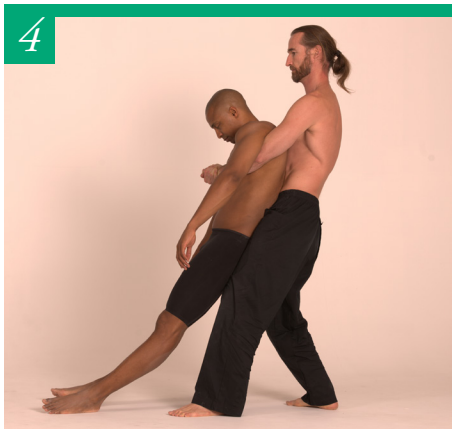
To train the more technical methods, find a partner that is about your size, weight, and strength if you are going to switch roles frequently, or someone lighter if you're the only person training. Progressions may involve carrying faster or over longer distances (or both), going uphill and downhill, carrying on uneven terrains, stepping over and under obstacles, and balancing on something. Always remember that the carrier is mainly responsible for the safety of the person carried.

Body Drags

Dragging implies that the person is unable to help in any way; their body rests partly on the ground, hence dragging it. It is an option for an emergency when there is no time to lift and carry the person, and you must move the person to safety in the quickest way possible. It's an option when you don't have enough strength to move the body in any other way. Be cautious with the drags, which can cause hard rubbing and burns; they're best done when the person you drag is wearing clothes and footwear, or you're on forgiving surfaces such as grass or sand.

1 **Knee-Hand/Foot-Hand Crawl Neck-Hold Front Drag:** This is an effective option if the person is unconscious. Their wrists are tied and supported by the rescuer's neck, and their body is extended and dragged below the rescuer between the rescuer's legs. You can use this technique when the person is conscious. The person hangs onto the rescuer's neck through grip strength (no tying of the wrists) if they've lost lower-body motion but maintained upper-body capacity.

2 **Ankle Drag:** This isn't the best dragging option for two reasons: The lowest part of the shin bone (just above the ankle joint) is grabbed, which is a relatively thick area, and the person is either flat on their back (or even chest), which creates a lot of friction and lets the back of the head or the face rub or even bang on the ground. Use this option when there is no time at all to reposition the body in a better way, and the danger faced is extremely high (such as burning or being crushed) and it outweighs the consequences of relatively minor injuries from being dragged. You should abandon the Ankle Drag should as soon as the person is out of danger, and you can choose a better option to move the person. You can do this drag with assistance from a partner.



3 **Wrist Drag:** This technique provides three advantages: A stronger grip because the wrists are thinner than the ankle area; it lifts the head and upper back off the ground, which reduces frictional resistance to dragging, and it keeps the head and most of the spine safe off the ground. You can do tthis drag with assistance from a partner.

4 **Underarm Drag:** This dragging method requires enough strength and a greater effort to lift the body before moving it, but it provides the advantage of canceling almost any friction from the ground and keeps the person the safest.

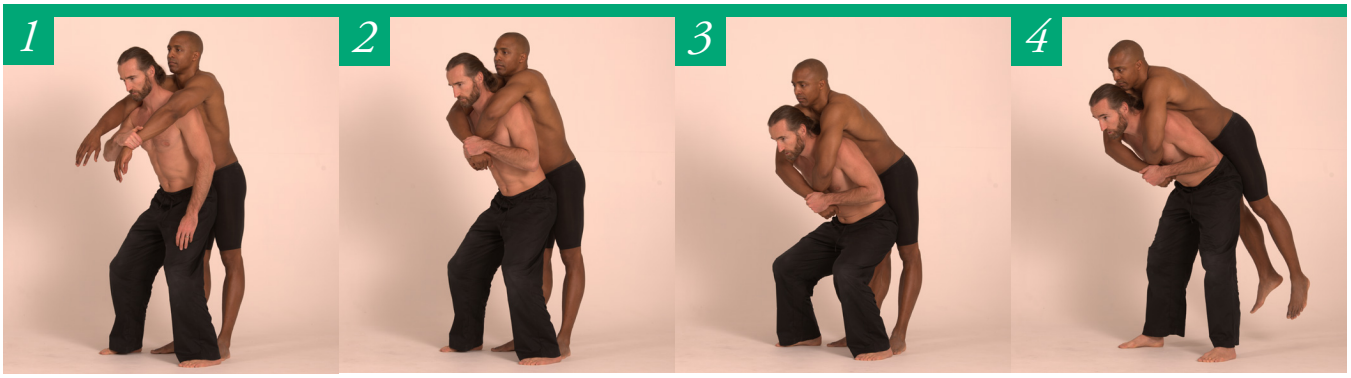
Body Carries

The Knee-Hand or Foot-Hand Crawl Carry provides two ways to carry a person in a ground position, and one way to drag them:reliable grip on the person's body, which tends to prevent running while carrying. Because of the transversal, "cross"-like position of the person's body relative to yours, this technique isn't suited for wooded or narrow areas; however, it works fine on open grounds.

1 The Knee-Hand/Foot-Hand Crawl Back Carry is an effective way to carry a body when there is a lack of vertical space, to stay low to avoid obstacles, or to enable you to get relatively breathable air in case of a fire. However, it's ineffective if the person is unconscious or if there isn't enough vertical clearance.

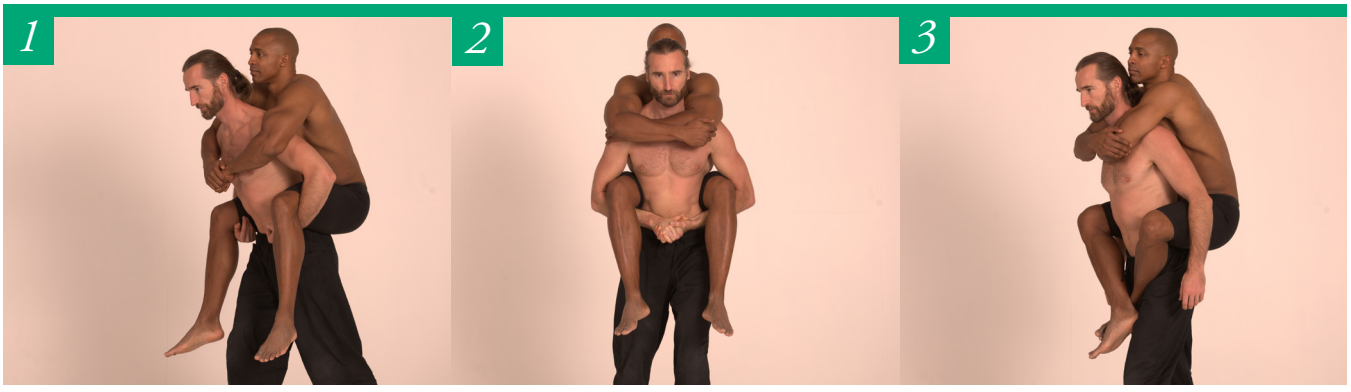
Back Carry

This is a very simple method (also known as the pack-strap carry) that is quick and easy, which in time of urgency is quite an advantage.



1. As Atiba stands behind, I lower my stance by bending at the knees with my torso slightly leaning forward, allowing him to lean on my upper back with both arms extended to the front over my shoulder. With one hand I grasp his wrist on the opposing side.
2. with the other hand I grasp his other wrist and pull them against my chest in a cross fashion, his arms bending at the elbows over my shoulders. Avoid twisting the victim's hands, wrists or elbows.
3. I lower my center of gravity by bending my legs more, while leaning forward more and pulling his torso forward against my back.
4. I push off my legs strongly to "bump" him up with my lower back, extending my legs while keeping leaning forward a bit more and pulling his arms down, to elevate his body up above me as much as possible. From there I can begin walking.

Below are variations (also called "piggyback" or "saddle-back" carry) of the back carry:



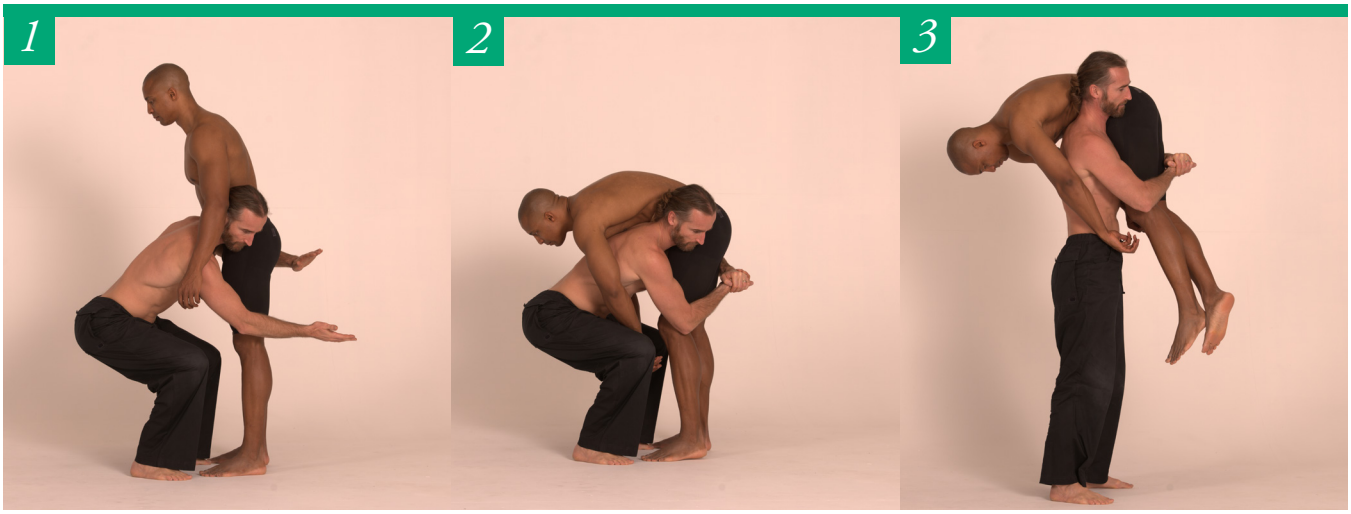
1. underhand leg hold
2. gable grip leg hold
3. Crossed legs (no arm): the person carried wraps and crosses their legs around the carrier's waist. This frees the carrier's hand (for instance so he can secure his balance, scramble etc...). It can be conveniently used as a transition from the foot-hand crawl back carry to the standing back carry. can start from ground of be a change of position from the backpack carry.

Regardless of the variation, it is essential that the carrier keeps leaning forward at all times. The person carried must refrain from any unecessary motion, leaning backward, or strangling the carrier's neck.

An alternate arm position for the person carried is to bend their arms up with both hands on top of the head (either superimposed, or cross-fingers)

Single Shoulder Carry

The single shoulder carry is another quick and easy way to hoist someone on one's shoulder and rapidly carry them away with a tight, secure grip. If done explosively, this movement can be used as a highly effective take down in a defensive situation..



1. Stand in a Square Stance facing the person; alternatively, you could choose a Split Stance. Bend your legs as you lean forward to bring your shoulder against the person's belly and center of gravity. Press your neck and the side of your head against their hip on the opposite side of the weight-bearing shoulder. Simultaneously open your arms and extend them behind their legs with your hands ready for the Gable Grip.
2. Assume a solid position and posture (feet firmly planted on the ground, shoulder pressing against the person's lower abdomen), tightly wrap your arms around their thighs to make sure your grip is strong. Let the person lean forward as much as possible against your back to bring your centers of gravity as close as possible over your base of support in preparation of the lift.
3. Forcefully push off your legs, regaining an erect posture and maintaining a strong and straight back all the way as you lift the person's body up. Keep a tight grip and press him the person toward you at all times. If needed, adjust the combined center of gravity before you begin walking, which is best done by slightly "jerking" the body for easy and quick repositioning.

TECHNIQUE TIP

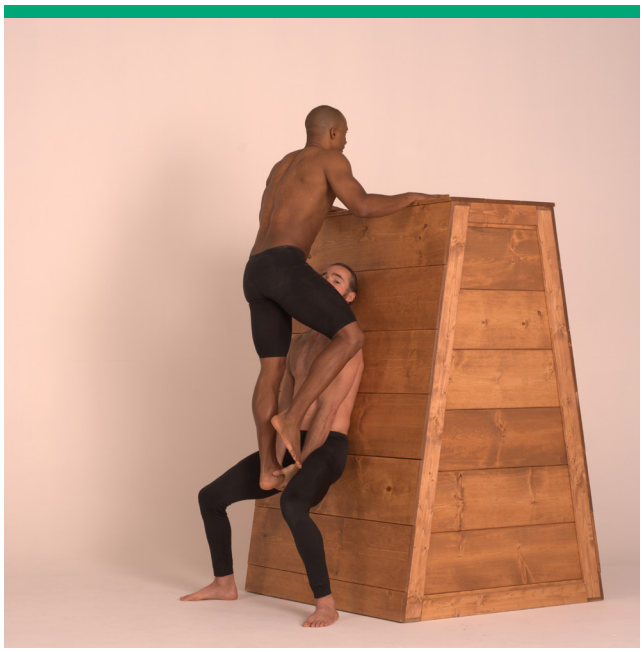
A valuable and fun progression to this technique is to take a few steps back and walk swiftly toward your partner, lift them up quickly, and run a short distance.

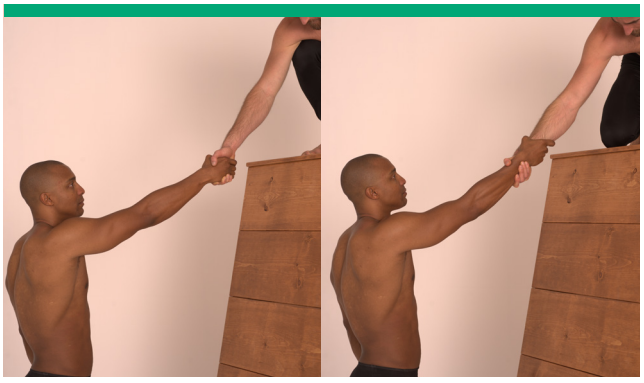
S-Grip Assisted Climb

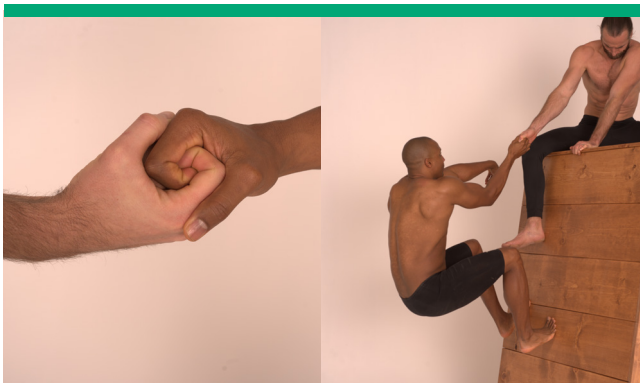
Movement assistance is done in numerous ways, such as using one's body as a support for someone else to climb. For instance, a person may step on the helper's knee, crossed hands, or shoulders to reach an elevation they wouldn't be able to reach on their own or to get there with more speed and ease (photo 1). Sometimes, the helper gives a hand to assist someone else below them by pulling them up. Of course, unless it's a young child who can be entirely pulled up without any effort on their part, adults must participate with any momentum they can generate themselves.

The grip is usually the main problem, for three reasons:

- The grip has to be strong and reliable, even when hands are slippery (the regular hand-shake grip shown in the photo doesn't work well when hands are slippery).







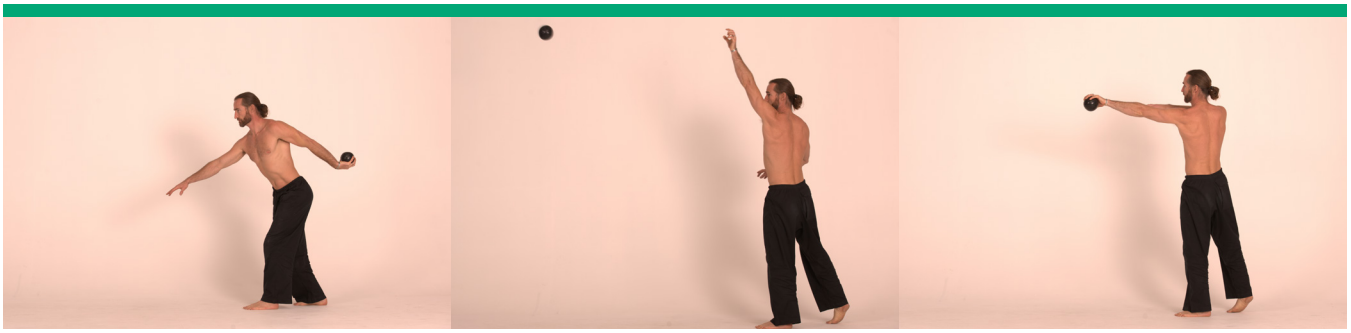
- The grip shouldn't shorten the reach, for instance when you're mutually gripping each other's wrists (as in the photo). This is a strong grip, but it shortens the reach, and the helper is in trouble if he needs to release his grip, but the person helped doesn't).
- Both people should be able to release the grip at any time if that means staying secure, but what often happens is that the person helped will hang on the helper even when the helper is losing their position and safety.

The S-Grip solves all three issues and provides the strongest grip possible (even when hands are slippery) and the longest reach possible while allowing both people to release it at any time. Before starting, the helper must ensure that he has established a secure position that can support the weight of the person they are helping. Two people can do this assistance movement for more efficiency and safety.

Removed from Chapter 31, Manipulation Movement 2 (i.e. from pages 461 - 479 in *The Practice of Natural Movement* book).

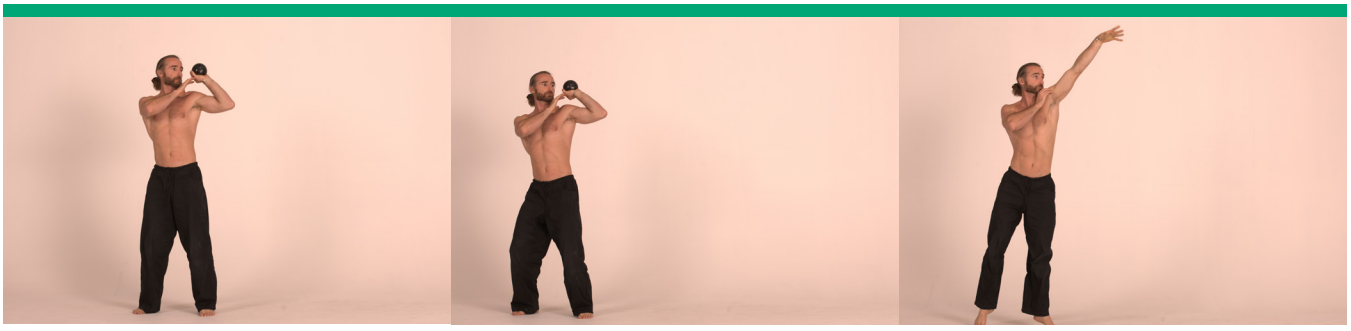
One-Handed Front Swing Throw

This throw is a good fit for relatively light objects thrown for accuracy rather distance. If distance is involved as well as accuracy, you may swing your arm back and forth two or three times and add rotational hip movement before the release. The trajectory of the object will be most often elliptical, unless the thrower releases the object with the arm pointing straight forward, as in the third photo. A ball may roll forward upon landing, but rocks typically stop moving where they land, which helps you focus on the accuracy of where the object first lands. You may target another object or try throwing into a container such as a bucket. The Front Swing Throw technique with both arms and heavier loads is described in more detail later in this section.



One-Handed Arm-Extension Throw

The goal of this throw, like the goal of the One-Handed Front Swing Throw, is accuracy rather than distance in throwing relatively light objects. You can add force by pushing through your legs.



Grip

The fingers are the last point of support for the object thrown before release, and they contribute to the power and accuracy of the trajectory. The shape and size of the object determine how you position your fingers. Ultimately, it's based on what is comfortable for you and provides you the best control over the object so that you can ensure a smooth and accurate release.

1

2

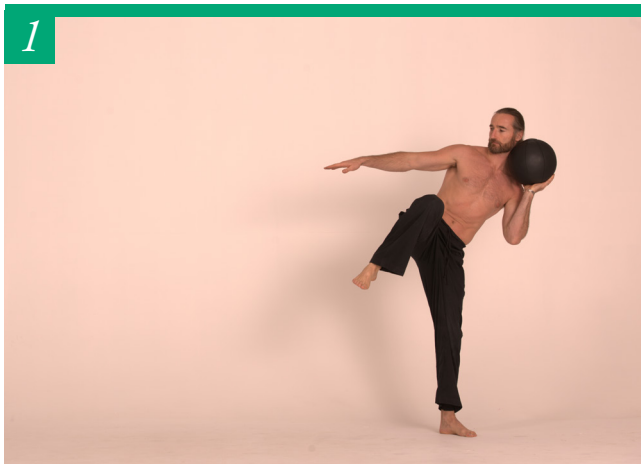
1 Efficient grip with the object securely held between four fingers. Upon release, the fingers extend, and the index and middle fingers are the last contact with the projectile, which imparts extra energy and accuracy to the throw.

2 Using a grip with the object stabilized between the palm and the five fingers is suboptimal. It's not the most accurate grip.

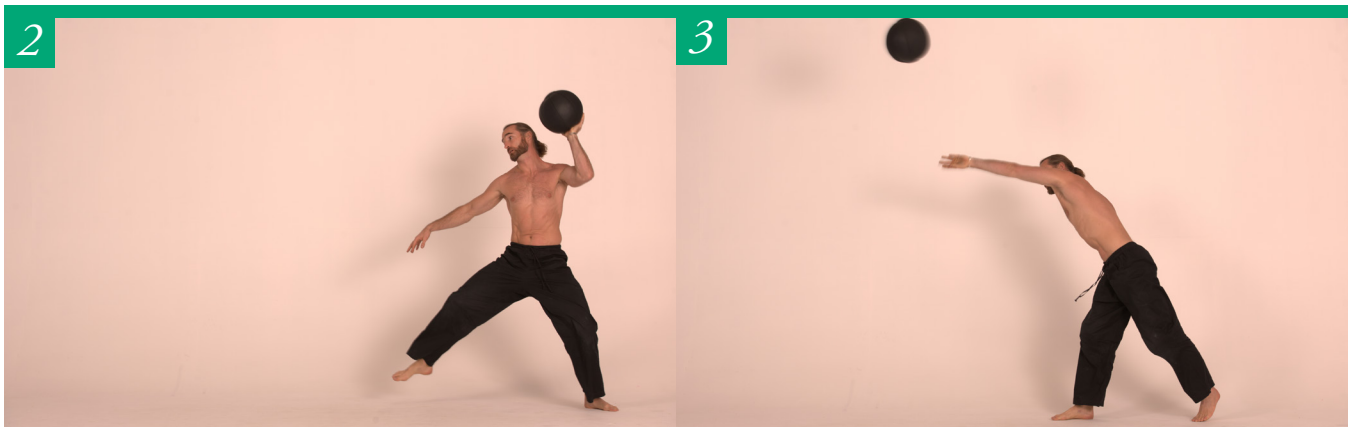
Leg-Lift, Single-Arm, Back-to-Front Push-Press Throw

Another strategy based on body-weight shifting relies on a push from the back leg and also on the elevation of the center of gravity to add downward velocity, which then transfers to forward acceleration. This throw requires significant single-leg balance to be efficient because any disturbance in balance during the throw impairs the trajectory.

1



1 From a Split Stance with the object held firmly in the Rack, shift your body weight all the way onto your rear foot then raise your front leg off the ground to bring the bent knee toward your stomach. Extend your free arm out for balance and aim while looking at the direction you intend to throw.

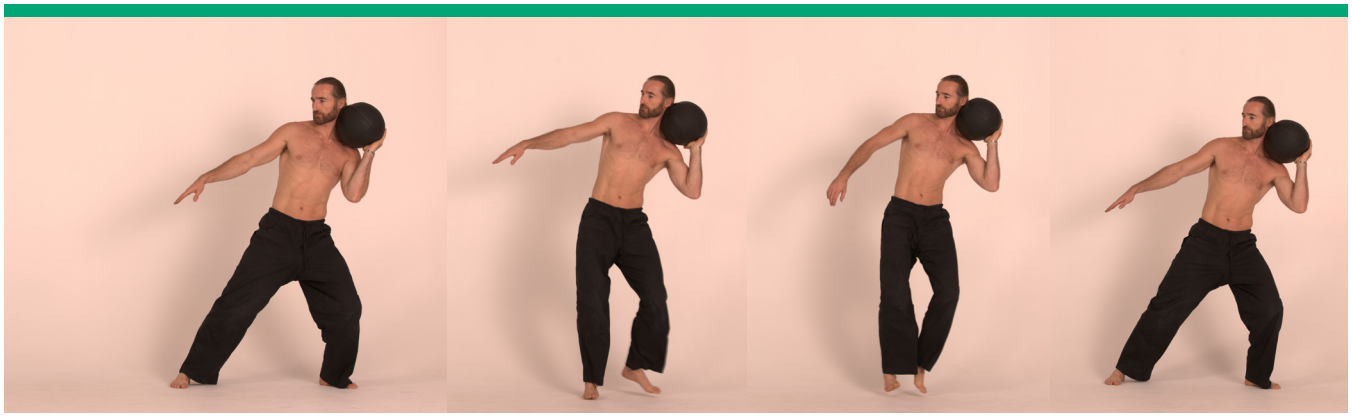


2 Swiftly extend your lead leg forward and down to shift your body weight onto your lead foot as you begin extending your arm to initiate the momentum required for the throw. Depending on the weight of the object, you may maintain the Rack close to the shoulder all the way until your lead foot is grounded; however, you also can start extending your arm before your foot reaches the ground (as shown in the photo). Notice that the elbow, wrist, hand, and load are at close to vertical alignment, though they're starting to tilt slightly forward in the direction of the throw.

3 Using the momentum you've created, extend your arm fully forward and throw the object as you land on your lead foot. Depending on how much momentum you've produced, you may follow through with a forward step.

Shuffling Single-Arm, Back-to-Front Push-Press Throw

A shuffle motion may add momentum and power to the Single-Arm, Back-to-Front Throw. The shuffle must be swift and balanced, and you must maintain body weight on the back foot to keep it loaded upon the last step before you push off the back leg to throw with the additional forward momentum. You also must lead with the front hip, which means that both hips should remain in alignment with the intended trajectory of the throw until the moment of hip rotation.



180-Degree Hip Rotation

To start in a full hip rotation, rotate your hips backward fully from the Side Standing position. Your front leg is internally rotated, and your lead foot is pointing toward the back foot. You may even fully "unlock" your hips by externally rotating the rear foot, which enables your hips to reach their maximum rotational range of motion. Both start positions add rotational amplitude and power. An extension to the 180-degree Hip Rotation approach is to add momentum with swift shuffling steps as you keep your body and hips turned backward in the opposite direction of the throw, until the lead leg rotates externally to ground the lead foot in a position that both enables a reversal of orientation and the generation of power from the hip.

1 To increase the force you can produce, start in a Split Standing stance facing the opposite direction where you intend to throw, with your hips fully rotated to the back. You may rotate your hips internally in the direction of your load-bearing shoulder. The heel of your rear foot is off the ground to add stability to your stance and remove some friction from the foot.

2 While maintaining balance and friction in the ball of the foot, slide your rear foot in the direction of the front foot and past it until it reaches about hip or shoulder width in a Cross-Legs stance. It's essential that your rear foot reaches past the front foot; otherwise, your stance would become unstable if you were to end up with your feet aligned.

Faults

- Extending the arm and allowing the holding arm and object to move away from your body too early before you have generated power.
- Allowing the lower back to extend, the upper back to flex, or the torso to lean sideways.

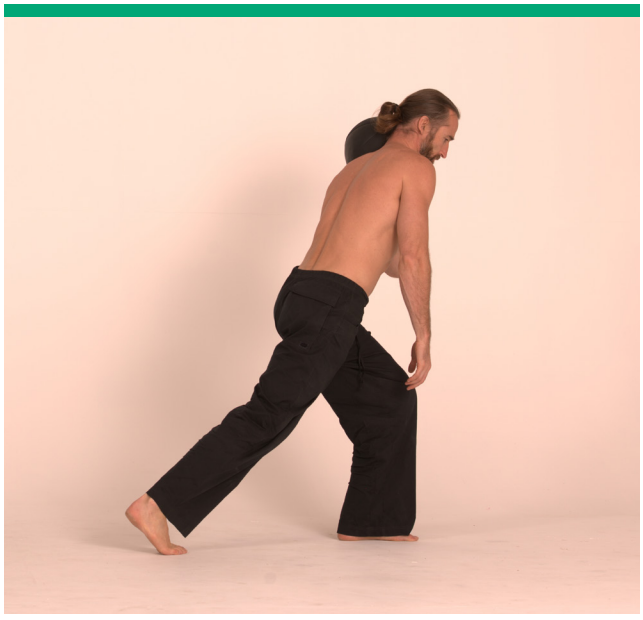
Faults specific to the back-to-front technique:

- Not loading the rear leg, or not shifting sufficient body weight to the front foot.
- Shifting the combined center of gravity backward too much in the start position.
- If standing in one spot is mandatory—which means you doesn't have the possibility of stepping forward upon throwing—shifting the combined center of gravity forward too much and losing balance upon throwing

Faults specific to the rotational technique:

- Lack of hip range of motion or lack of rotational power.
- Allowing the arm to lag behind the hip movement.

Single-Arm, Back-to-Front Push-Press Rotational Throw



It's quite common to intuitively use some rotation in the back-to-front technique, or some body-weight shifting in the rotational technique. Now that you have separately experimented with each pattern to generate throwing power on the spot, you may start combining both for increased power. You won't double your throwing power, but if you do this technique correctly, you'll add some power. It's relatively common to not make any gain, or perhaps to even lose power, in the beginning because combining both patterns is often confusing at first.

As you can see in the photos, you'll be in a 180-degree rotational shoulder throw position with your upper body leaning forward, and you'll bend your front leg more so you'll be able to load your front foot with more body weight as you prepare for a back-to-front push on top of the hip rotation.

Rotational Throw-*and*-Catch Partnership Practice

You normally use the rotational throw-and-catch patterns for short distances—usually no more than a few feet—when you don't need great accuracy. For instance, you might use this type of throw to toss one or several objects aside. (If the goal is to throw light or heavy objects far or with accuracy, you want to revert to other throwing techniques.) You also can use these techniques to pass an object—sometimes without the object going airborne—to the next person in line. For example, a group of people can use this technique to pass sandbags or containers over a certain distance with maximum efficiency compared to each person individually carrying one item at a time. Depending on the number of people relative to the distance that the object must cover, the weight of each item, and how convenient it is to throw and catch, the object can be thrown over a distance from 1 to about 4 feet. Alternatively, you can pass the object without ever floating it in the air, in which case it's not technically throwing and catching because the object is never airborne, but the movement pattern is the same. This is like performing Front Swing throw-and-catch patterns without letting go of the hold on the handle, which I cover a little later.

After you've learned to generate power through hip rotation to throw with a single arm, you can use the same pattern to accelerate (throw) or decelerate (catch) heavier objects. The movement looks the same either way—the catch is a reverse sequence of the throw.

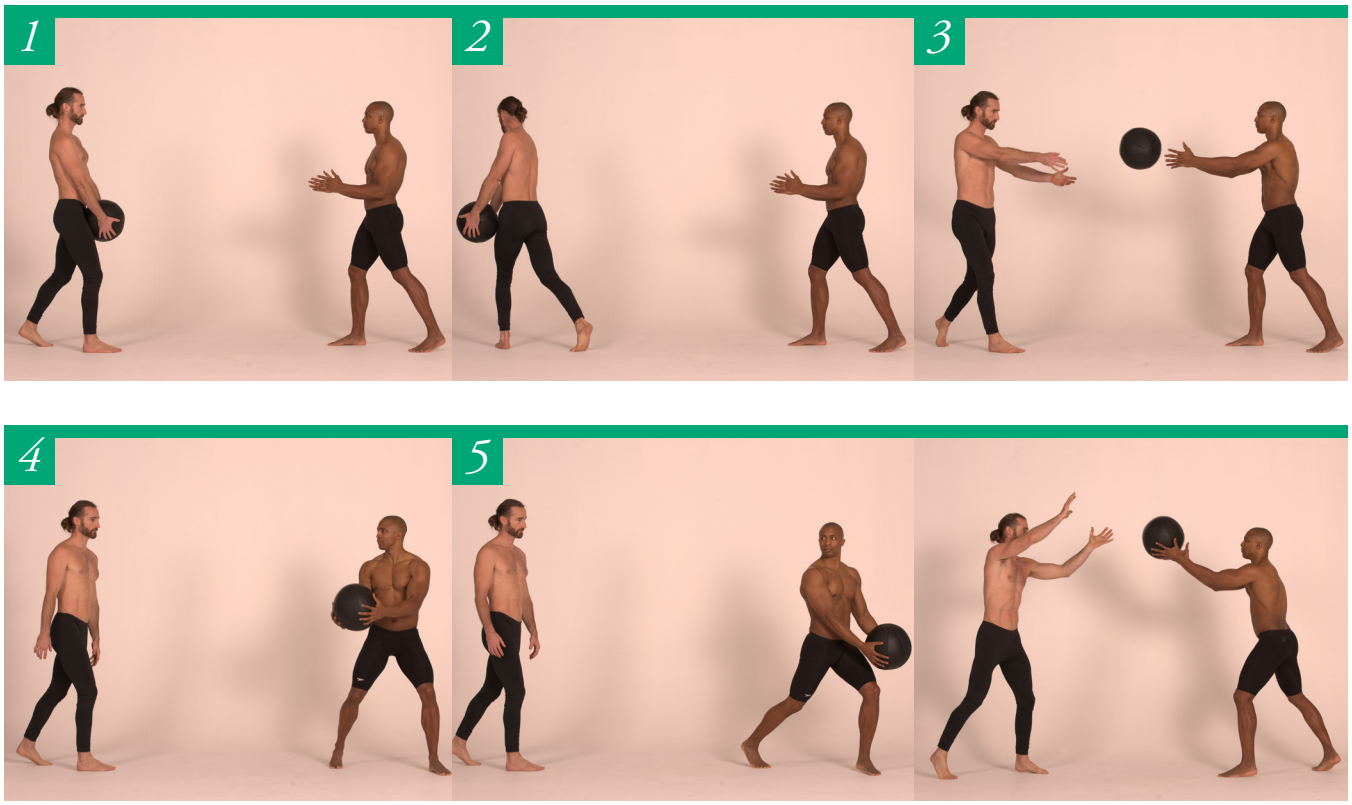
You can grasp the object at different levels: shoulder, chest, or even hip level. A hip-level hold doesn't generate the most power in throwing, but it enables catching objects at a lower level when it's more convenient. Because your arms fully extend in front of you, the hip-level hold is more challenging for managing your combined center of gravity, and you easily can be thrown off balance. The chest hold is best for straight throws in a forward, horizontal, and linear trajectory. The shoulder hold enables you to throw the furthest with a rotational pattern.

To make it an efficient partnership practice, partners should ideally have relatively the same level of skill and strength, so that they can both practice at approximately the same level of difficulty.

The most frequent issue when practicing back-and-forth throwing and catching is that beginners stand too far apart and often keep increasing the distance between them, not realizing that it's a level of intensity that ruins their effort to learn efficient form. People like to stand far apart because it's fun to throw and catch from far, and there's a natural fascination for long trajectories. However, the tendency is to become fully absorbed by the flight of the object, which means the mind completely disconnects from the necessity of efficient positional control. In these cases, the only reason why people can keep throwing and catching with inefficient form is that the load is relatively light, without any other consequence for missing than having to pick up the object from the ground. With heavier and harder objects, all effectiveness would be lost, and the potential of back, hand, or foot injury goes up dramatically.

A better option is to increase the pace of the back-and-forth throwing and catching motion while maintaining efficient form, which also increases the demand for alertness and responsiveness upon catching. You also can increase resistance with heavier loads rather than first increasing the distance between the partners. Think of a line of people working together to extinguish a fire in the old times before firefighters existed. They stood close together and passed heavy water buckets a short distance. (Even modern rescue teams occasionally use this kind of method.)

Beginner practice in partnership is all about coordination and efficient collaborative work. You agree on a certain object, weight, standing distance, trajectory, and even cadence, and you both respect it as you throw. You don't want to throw too hard, too short, too far to the side, or too close; do your best to throw at the optimum distance and speed so your partner can be in the best position possible for a rotational catch. Generating unpredictability in the throwing patterns develops adaptability, but you have to work to achieve this higher level of throwing and catching training.



1. Begin in a Split Stance facing a partner, holding a tall posture and an object with straight arms. Optionally, you could use a Chest or Shoulder Hold. Your feet are staggered, hip width apart, so that your position is stable. The heel of your rear foot may be elevated if it allows you to pivot on it, but it may be flat on the ground as well.
2. Wind up the throw by primarily rotating your hips and your torso away from your partner. If you started in a flat-foot position, as you rotate your hips backward, allow your feet to pivot on the ball of the foot before you plant the back foot flat to the ground. The heel of the lead foot may elevate to facilitate reaching full backward hip rotation.
3. Your arms should swing and follow your body in a relaxed manner. Be sure to maintain spinal alignment from your head to your hips. Depending on how much power and distance you're trying to generate from a standing position, you may rotate your hips and torso even more than what's shown in the photo, especially if you allow the rear foot to pivot backward. The position of your head may follow in alignment with the rest of the body, but you could keep your head facing toward the direction of the throw.
4. As you throw, you reverse the motion and position from step 2 to rotate your hips and torso and pivot your feet toward your partner. Initiate motion first through the hip rotation, second from the torso rotation, and last from arm strength. Let your head accompany the motion of the rest of your body, or even precede it slightly if accuracy is an issue, so you can visualize where you're aiming and adjust the trajectory of the object by modifying how much power you generate or the direction and angle of your arms before you release the object.
5. If you expect your partner to throw the object back at you, you have some time to relax and let your arms loose as you watch the object fly in the air, catch it, and throw it again.

Catching

Refer to the set of photos used for the previous steps.

1-2 You have been alertly watching your partner prepare a throw. You have either already have your arms ready to catch in front of you, or you are relaxed with your arms loose so that at the last second you can bring them to the front for catching.

3 The object has been thrown and is airborne in your direction (or slightly to the side). Reach both arms to the front in the direction of the object. In training practice, if the trajectory of the object is undetermined or random, you need to step into position before catching, which means moving to where the rotational catch can be optimally performed.

4 Place both hands securely but smoothly on both sides of the object when it's in front of you. Immediately rotate your hips backward and pivot on your feet to allow your hips to rotate, which enables you to progressively decelerate the object.

5 Optionally, if the thrower released the object at a higher level, you can catch it at a higher level. This usually naturally happens as the partners stand further away from each other and throw the object at a 45-degree angle for greater distance.

SAFETY NOTE

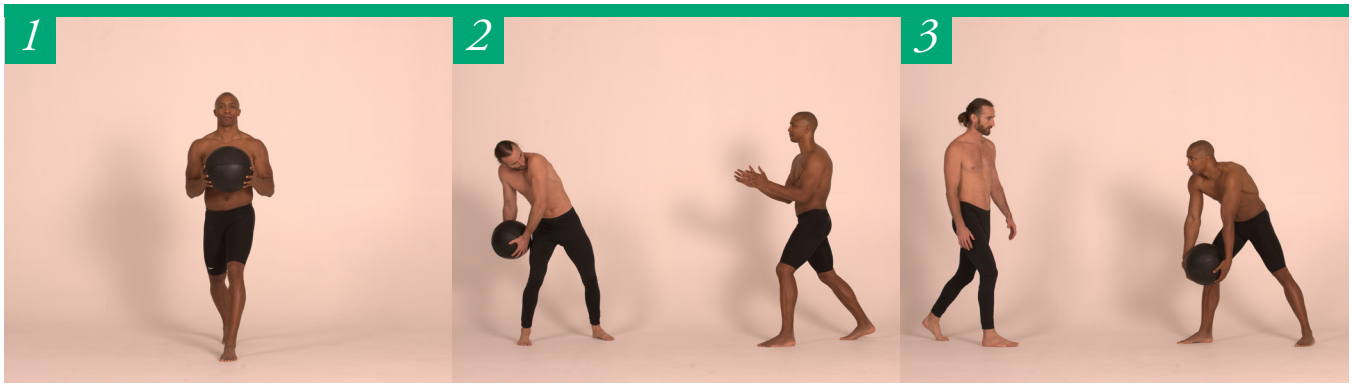
If at any point you don't feel safe attempting to catch the object, remember to step away, push it away, or drop it.

Progressions

Progressions for both throwing and catching may include a heavier object, an object with an uneven shape or weight distribution, a different terrain (soft, slippery, uneven, inclined, declined, and so on), or more repetitions. You can be throwing for greater distance or accuracy. You can increase the complexity of the catching by varying where and when the object is thrown.

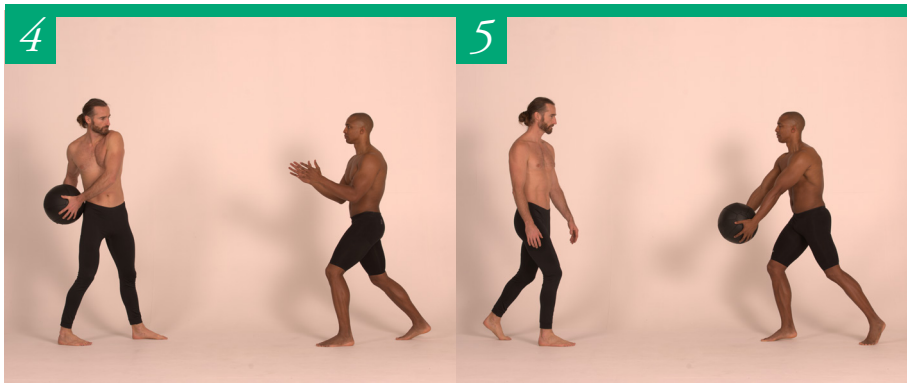
Faults

The following faults can be done upon throwing or catching.



1 Feet are aligned, which reduces hip rotation and increases instability.

2-3 Torso leans forward and sideways, usually with reduced hip rotation.



4 Feet don't pivot, which reduces the range of motion at the hips and stresses the lower back as it resists axial rotation under compressive loading.

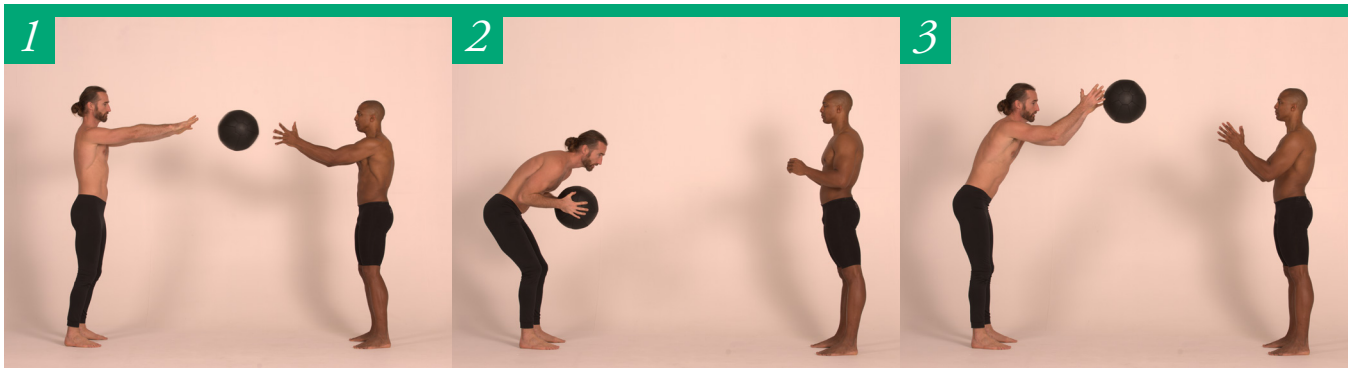
5 The object is thrown or caught mostly though upper-body strength.

Pivot-Step Catch

If you are trying to catch a relatively heavy object, and its trajectory forces you to step quickly toward it to reach it, you can't stop it on the spot in a position perpendicular to its flight if it's heavy without putting yourself at high risk of back injury. The solution to effectively and safely decelerate the object is to deviate its trajectory and lengthen the time and range of motion between the moment you grasp the object and the moment its velocity is brought down to zero.

1. Swiftly step forward with both hands reaching out to the object. If your body orientation is perpendicular to the inertial force of the object, the combined center of gravity is about to shift way beyond your base of support, which is going to throw you off balance unless you quickly adjust your position. Anticipate your rotational motion by stepping with the front leg that's on the side of the direction from which the object is coming; your front foot is pointing in that direction.
2. Swiftly step forward with your front foot pointing in the direction of the rotation. Your rear foot leaves the ground the moment your front foot gets grounded to maintain a swift rotation. Your arms are bent not because you're pulling the object toward you but because you've moved your body closer to it. You're not trying to stop the object with your arms at this point; you're only maintaining your grip on it.
3. As your arms extend down and forward to let the remaining inertial force of the object benefit your rotation, keep swiftly stepping in this rotational manner to allow your feet to pivot on your heel if needed. Depending on the object and your position at the moment you grasp it, your stepping pattern may not be the same each time.
4. Regain a Standing Stance with your arms fully extended in a Hip Hold.

Faults



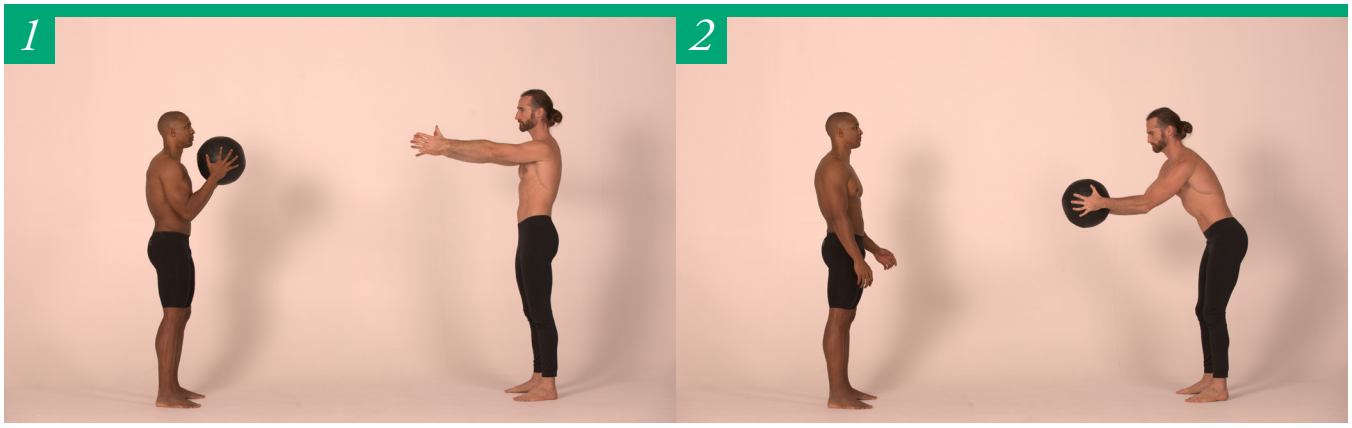
1 Skipping the squat to initiate the throw so that you use only your arms. However, you can do this intentionally as part of practice.

2 Leaning forward and flexing your spine as you bend your knees to use a forward hip drive but not fully extending the arms or hips to finish the throw.

3 Leaning forward and holding the object at belly level and then throwing it using only arm motion.

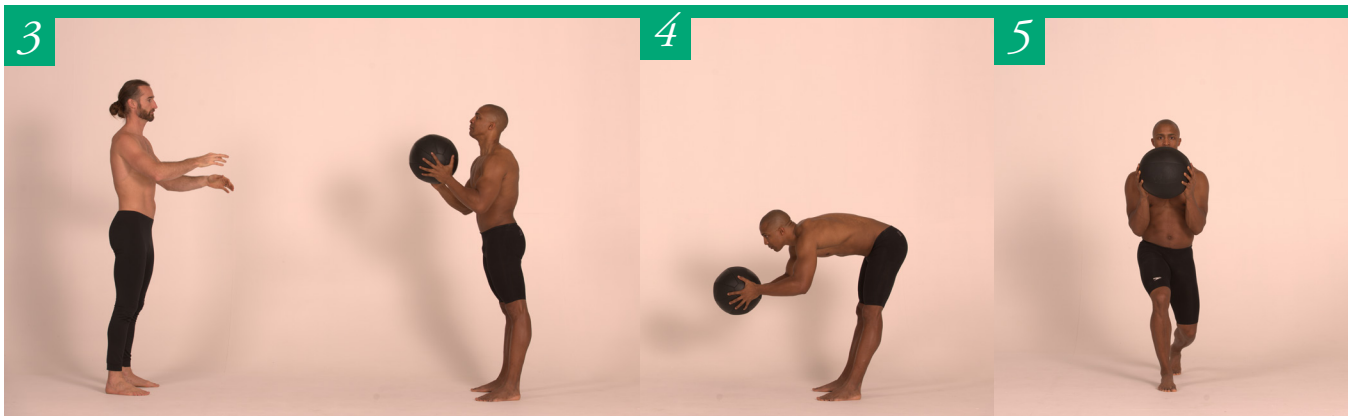
Another fault is throwing with a trajectory that prevents your partner from effectively catching using a Push-Press pattern, unless you have agreed to throw in an unpredictable way. Unless you have made that agreement, you need to ensure that you throw and catch in the most efficient and replicable pattern, so you don't surprise the catcher and force that person to adapt quickly to unpredictable trajectories.

Faults



1 Preparing to catch with fully extended, rigid arms, or catching this way with too little or too-slow arm flexion upon grasping.

2 Trying to stop and hold the object in front of your body with little arm flexion and no leg flexion, shifting the combined center of gravity to the front of the base of support. This error generates great stress on the body, especially the shoulder and back muscles, and it could force your lower back to bend/flex and hurt your spine.



3 Stopping the object with fully flexed arms and stiff, fully extended legs. The combined center of gravity is still to the front. In this case, compensation results in hyperextension of the lumbar area.

4 When the trajectory is too short, extending your arms and leaning forward to make the catch rather than stepping forward. This compromised position is unsustainable and could easily injure your back.

5 Stepping to a Split Stance with your lead and rear feet aligned, which is a very unstable stance.

Variations of the Push-Press Throw and Catch practice may include changing position such as doing it from the Tall Kneeling position (photo 6), or adding any other move in between throwing the object and getting back to the catching position. Other possibilities include increasing the pace of the back-and-forth motion, changing the distance, and adjusting the angle. The thrower may also throw to the side of the catcher to force the catcher to step sideways swiftly to maintain efficient catching position, which is especially challenging when the catcher doesn't know to what side or when the object will be thrown (photos 7 and 8).

Faults

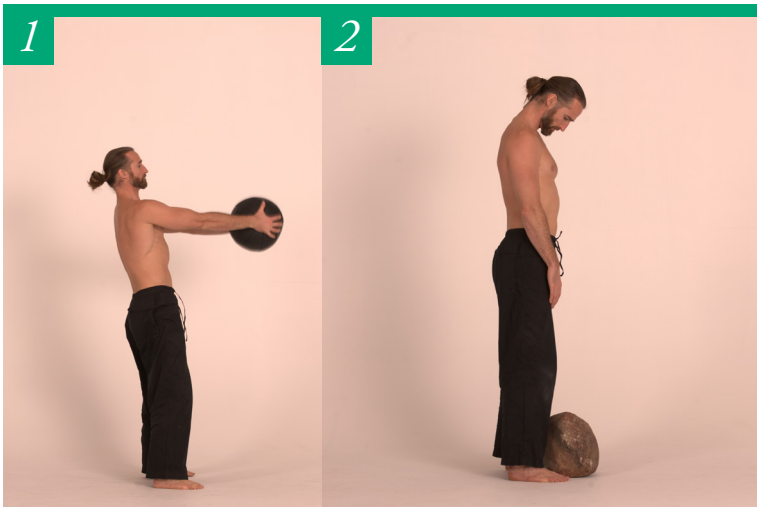
General:

- Squatting instead of hinging
- Swinging with flexed arms
- Flexing the spine when swinging the object down and behind you
- Lack of tension in the abs or glutes
- Swinging down or catching:
- Grasping with overly bent elbows
- Grasping with rigid arms
- Decelerating through the arms before hip hinging
- Hinging too soon with the load and combined center of gravity too far to the front of the body
- Flexing the knees before flexing the hips
- Shifting body weight too much toward the heel and potentially disturbing or even losing balance
- Not hinging enough
- Swinging up or throwing:
- Extending the knees fully before the hips extend fully
- Using upper-body strength rather than hip power to elevate and accelerate the load
- Releasing the object before the hips are fully extended
- Releasing too early, which leads to throwing too low, or releasing too late, which leads to throwing too high
- Not reaching full hip and/or knee extension
- Overextending the hips and lower spine

Front Swing Overhead Throw

This is an extended Front Swing pattern with a late release and a complete hip and arm extension to throw an object overhead while facing the direction opposite to where you throw, unless you're throwing vertically. For that reason, the power and distance generated are greater than the regular Front Swing throw but at the cost of decreased accuracy. The other difference is that because of the orientation of the body, it would be quite challenging to use this pattern for catching an object.

1. Initiate an explosive Front Swing. To reach peak power, you may swing the object two or three times before throwing it.
2. Continue to extend your hips forward and finish the throw by extending your arms overhead as your torso leans backward, without hyperextending your spine. Remember that the object travels tangent to both the point and angle of release, so proper timing is essential to ensure distance or accuracy.



Overhead Throw

With this throwing option, you can hold the object in a firm and reliable Rack and use the power of your legs, hips, and arms for greater distance or impact while you face the direction where you throw for maximum accuracy. You can use the same movement to slam the object to the ground or strike down with a tool or weapon. You can precede the throw with a rotational, swinging motion at the hip and arms to add power to the overall movement.

1. Begin in a Split Stance (though you can also start in a Square Stance) with the object in the Rack.
2. Wind up the motion by bringing the object directly overhead and then down the back of your shoulders as far as possible in one smooth motion. Simultaneously bend your knees, extend your spine, and allow your weight to shift toward your rear foot.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