



Double pole

Double pole is the third gear in the classical transmission. It is used on gradual uphill and downhill terrain where kick double pole and diagonal stride will over-rev the engine.

Introduction

There are several important factors that play a key role in properly executing double pole. To make the discussion easier they have been broken down into body position, timing and power. Each of these components plays an integral part in executing the technique successfully. It is important that the athlete perfect each component to be successful.

Body Position

Body position in all sport is important for enabling the athlete to apply power to each motion effectively and efficiently. For this reason body position in double pole is similar to other ski techniques as well as other sports.

Feet: Center the weight across the ball of the foot. If the weight is too far forward onto the toes the front of the ski's kick zone will dig into the snow. If it is too far back it will be hard to apply enough force to the poles to be powerful. In double pole the weight will shift to the whole foot and even to the rear of the foot for the glide portion of the technique, but will shift back to the ball of the foot for the poling portion of the technique. Though time spent on the balls of the feet will be short, body position drills should focus on keeping the weight on the ball of the foot as this is the power-position for this technique.

Ankles: The bend in the ankles is vital to directing the power in such a way that the skier is propelled forward down the trail and not up in the air. The degree of bend at the ankle is dependent primarily on terrain - the steeper the terrain the deeper the angle at the ankle. Also the more forward the skier can get in the power position the greater the bend at the ankle will be – until the entire rear of the boot lifts from the ski.

Knees: The angle at the knee must be quite shallow as compared to the ankle angle. The legs do contribute to the power applied to the poles, but this contribution needs to be balanced with the requirement expected from the legs in diagonal stride. So limit the use of the legs to a slight bend at the knee. When the knees bend deeply, there is a lot of body weight to lift when returning to a proper starting position.

Hips: The hips must be high and forward. When it comes to body position this is accomplished by having the skier's weight over or in front of the balls of the feet, maintaining the proper ankle angle, keeping the upper body in a "C" position and by seeking a high position with the hands and a forward position with the elbows.



Look for the hips to remain high and forward through the entirety of the double pole cycle – even at the end of the cycle when the poling motion is finished.

Core/Back: The upper-body, from tailbone to head, should form a soft “C” shape. Think Neanderthal man, big foot, gunslinger. Do not think of the Queen of England or of the postural advice of your parents. This “C” position will help keep the hips over the feet, relax the lower back as well as position the muscles of the core to apply force to the poles. This “C” can be very shallow leaving the skier quite upright or rather pronounced putting the skier in an aggressive forward position. Seek to stay in a more upright position where the hands are high and the body is working from a high position to a middle position rather than from a middle position to a low position. A common mistake is to fold at the waist into an “r” position. This forces the hips back and slows the cycle time of the double pole as well as steals power from the optimal use of the core muscles.

Shoulders: Shoulders should be rounded leaving the arms hanging free and loose in front of the body. This position is ideal for applying both body weight and force to the poles.

Arms: In the neutral or starting position the arms should hang loose from the shoulders. The angle of the arms at pole plant should enable the skier to apply maximal force with the core and back as well as the weight of the upper body to the poles. This means that the arm will often be close to or less than 90 degrees. This is terrain dependent, with steeper terrain demanding a sharper angle. At pole release the hands should be low. The follow through of the arms is dependent upon speed (and terrain). The faster the skier is moving the longer the follow through can be – but doesn’t necessarily need to be. Keep the follow through short enough to help keep the hips high and to return to the poling position again as quickly as the terrain dictates.

Timing

In double pole the upper-body is used to apply power onto the poles to propel the skier down the trail. The key to double pole timing is in the application of power to the poles. With the arms and body in the proper position the body weight falls on top of the poles as the core contracts, thus crunching down powerfully on top of the poles. The back and arms simultaneously push on the poles. This application of force must be quick and timing tight in order to be maximally powerful. The return of the upper body to a high start position is also important to this technique. The forward arm swing must be dynamic and in synchrony with the return of the upper-body to a high position in order to gain forward momentum and in order to return to a high position quickly and smoothly. See more on timing under “Power”.



Power

Power results from force applied quickly. Power relies on being in a position that allows both the application of the skier's strength and the application of that strength over a short period of time. The above description of body position aims to put the skier in that position. Timing allows power development while maintaining the forward momentum of the skier.

The effective, efficient and repetitive application of power to the poles is the goal of learning proper technique – including body position and timing. Once the skier can grasp the idea of proper body position it must be ingrained through repetition. This repetition will also develop the strength it takes to maintain this position and develop power from it. The practice of proper timing will help develop the speed of force application.

A good mantra for double poling is "high hands." The power position in double pole is the hands high, arms at 90 or less degrees, poles against or parallel with the forearms, and body leaning from the ankles dramatically forward. From this start position the body's weight will crash down onto the poles, the core will crunch and the arms and back will contribute force simultaneously. The poles will connect with the snow delivering all this power directly to the snow. With the arms held in tight there will be minimal power lost to a collapse of the arms, and the forward movement of the skier will push the tips of the poles back and the handles down translating power to forward movement.

Hands that start low steal most of the body weight as well as the ability of the core muscles to do their job at the start of the poling motion. At the same time the skier will not be able to seek as great a forward lean. While the pole angle more immediately translates to forward motion (baskets planted further back) there cannot be as much force applied to the poles. This force is applied late in the cycle and leaves the skier in a very low finishing position.

It should be noted that the arms can be planted at straighter than 90 degrees. In this case, however, some of the applied force will be given away as the arms collapse to a structurally strong position. The force in this case cannot be applied as quickly, thereby resulting in less power. Cycle time will also increase making it difficult to maintain momentum as the terrain goes uphill.

Training/Racing

Technique is the tool you use to apply your fitness to the sport. Technique is the screwdriver, fitness is what you use to turn the screwdriver, ski racing is the job you are trying to accomplish. With technique training you are simply trying to develop a good tool to help you get the job done. But fitness comes first. If you are fit enough you can drive the screw into the board with no screwdriver at all. There are many examples of skiers with inefficient technique winning even World Cup ski races – in other words skiers who can drive the screw with no screwdriver – and they do this with fitness. All technique work must be done in conjunction with and as an addition to preparation aimed at aerobic, anaerobic or strength oriented training. Do not mistake having a nice tool chest with being a good carpenter.



CROSS-COUNTRY TECHNIQUE FUNDAMENTALS

Drills

- Locked 'n Loaded
- Standing Broad Jump
- Bathroom Scale

Conclusion

Proper body position enables proper timing—both of which enable effective, efficient application of power.