

# The Deadlift

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## Brief history

The exercise that we today know as the deadlift, has in fact evolved over time. The archaic "dead weight lift" or "dead weight lift with lifting bar", involved a T-bar with weight loaded on it while the lifter stood on sturdy chairs or other such platforms. An unbelievable amount of weight could be lifted in this manner due to its short range of motion. The main limitations are in the grip. This lift is similar to the modern day rack pulls, where a heavy amount of weight is lifted deadlift style a short distance in a power cage or squat rack.

## Overview

The deadlift is a compound movement that works all of the prime mover and most of the synergistic muscles in the abdomen and lower body, with emphasis on the erector spinae, lower back and upper back, along with muscles of the quadriceps, hamstrings and gluteus maximus. The remaining muscles are involved in fundamental motor control. It is, in a sense, the purest single event test of "strength" because it is one of the few lifts of dead weight (weight lying on the ground). In most other lifts, the weight changes direction or starts in the air and several other athletic skills such as balance and coordination are required and emphasized. For example, both Olympic weightlifting events require a great deal of athletic skill in addition to strength. In addition, it is commonly believed to be the oldest test of strength dating back to cultures that competed at lifting the heaviest stones.

## Exercise execution

### Grip

In performing the **deadlift** there are two viable grip options. The first involves a normal overhand (pronated) grip, with the second being a mixed overhand (pronated) and underhand (supinated) grip. This latter grip is sometimes called "offset," "staggered," "alternating" or "mixed" grip. Considering forearm strength, overhand grips still suffer from the bar potentially rolling about, which the mixed grip is capable of neutralizing, through the physics of reverse torsion. The mixed grip also allows more weight to be used for this reason.

With the feet about shoulder width apart, address the bar in a similar way to the position adopted for an Olympic lift (i.e. clean or snatch). The bar should therefore appear to be over the balls of the feet looking vertically downwards. Next, squat down and grip the bar wherever is most comfortable. This will usually be just outside the line of the feet and for a standard deadlift would be with one hand gripping the bar in an overhand fashion and the other in an underhand fashion. Then sit back into the start position by lowering the hips and flattening the back. At this point the thighs should be almost parallel to the floor (hips slightly above the level of the knees) with the shoulders in line with the bar. It is important to look straight ahead at this point also. The arms should be fully extended, and with chest pushed up, and the shoulder blades pulled back and together. This chest and shoulder action assists in maintaining the appropriate lumbar curve. *Figure 1* clearly highlights the start position and the importance of this by achieving the correct body orientation as well as adopting a solid posture.

Movement is initiated by extending the hips and the knees in a forceful manner whilst maintaining the posture from the start position (*Figure 2*). It is also important to leave the arms locked out, so all the force acting on the bar is through the legs. The bar should be kept close to the body



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throughout the movement. The athlete should come to a standing position with a completely upright posture to complete the concentric phase of the lift (*Figure 3*).

If the shoulders are still rounded forward whilst in this position, then try to pull them back so the chest is prominent. If this is not possible at this stage, then it is recommended that the loading be decreased so the complete motion can be completed with correct techniques and optimal mechanics. From this point the bar should either be lowered in a controlled manner back to the start position or dropped back down to the platform ready to commence the next repetition. The back should remain flat throughout this eccentric lowering of the bar.

## Deadlift variations

The **Romanian** deadlift or **stiff leg** deadlift is commonly used by Olympic Weightlifters. This variation puts more emphasis on the hamstrings and glutes. To perform this exercise, grip the bar with a standard "clean grip" (i.e. both hands overhand) then extend the knees but keep a slight bend in them throughout the exercise and let the weight descend below knee level by bending from the hips whilst maintaining a strong posture involving a completely flat back (pull the shoulder blades together and maintain this position). When the stretch in the hamstrings is felt by pushing the hips backwards (i.e. the bar is somewhere between the knees and the middle of the shin), then the hips should be extended again to return the bar to the start position. Throughout the movement the shoulders and chest should remain ahead of the bar and the arms should remain straight.

*Figures 4 and 5* show the position of the shoulders in relation to the bar at different stages throughout the exercise. They also show the position of the hips at the extreme of the eccentric phase (*Figure 4*) and the hips moving forward again throughout the concentric phase of the lift.

The **Sumo** deadlift is a variation of the deadlift whereby the legs are spread far apart to the sides, mimicking a sumo stance, hence the name (*see Figure 6*).

The grip is therefore generally inside of the knees (*see Figure 7*). This variation changes the emphasis of the lift to the legs instead of the back, though the back clearly still plays a part, but to a lesser degree. The sumo deadlift, if performed incorrectly, is capable of placing excessive stress on the hips and hamstrings, as well as the connective tissues of the pelvic bone and by extension, the lower back.

The sumo style deadlift has gained a reputation as decreasing the stress placed on the lower lumbar by as much as 10% when compared to the conventional deadlift. It also seems to be favoured among those who are leaner and have longer than average torsos. Since the sumo style requires less hip flexion and a more upright trunk position, this may benefit people of this phenotype by reducing the torque on the lower spine. We also know that the sumo style deadlift requires much larger knee and ankle moments i.e. more flexion of these joints is required when compared to the conventional style. This implies that the quadriceps may be more active in the sumo style. Furthermore, because of the wide stance utilized in the



Figure 1



Figure 2



Figure 3



Figure 4



Figure 5



Figure 6



Figure 7

sumo style, this method requires less mechanical work than the conventional deadlift.

The **Clean deadlift/ Snatch deadlift** is used to strengthen the pull from the floor and to teach a lifter proper positioning and timing of the bar and body in the first, second and third stages of the pull. Due to the loadings involved, it is imperative that special effort is given towards maintaining posture during the execution of the lift. This kind of deadlift can be a useful adjunct to the clean or the snatch. During the eccentric phase of the lift (i.e. back to the start position), it is common for the lifter to slow down whilst maintaining correct posture. Conversely during the concentric phase, the lifter may be a little more explosive and extend the hips with a good deal of velocity.

Deadlifts can also be performed using dumbbells or barbells, with one hand or two hands and with one leg or two legs. Variations are only limited by the coach and athlete's imagination. Other variations are the Side deadlift or Suitcase deadlift, deadlift from a box, Rack Pulls, deadlift lockouts.

### Common faults with the deadlift

The most common fault exhibited by athletes when carrying out the deadlift or an associated variation, is to lift with incorrect posture and thereby suffer a great amount of flexion in the lumbar or thoracic regions of the spine. Possible causes for this eventuality include poor trunk control, particularly in the lower abdominal region as well as around the scapula throughout the eccentric phase of the lift. Poor flexibility in the hamstring muscles can also lead to poor posture when executing a lift. Failure to maintain good posture causes undue stress to the spinal discs, by pinching the front and leaving a gap at the back, forcing the internal fluids to compress towards the back, and potentially causing herniated discs. In addition, the compression can squeeze the spinal roots of the spinal cord, causing nerve-conditions like lumbago or sciatica.

Continual repetition of "rounded back" deadlifts can also lead to kyphosis of the spine. Kyphosis is usually attributed to slouching. It rarely causes pain, but rounding of the spine can lead to acute injury which in turn will affect training and performance. Most "athletic" sports require good posture and therefore if correct mechanics are exhibited, posture will not be compromised for training purposes or ultimately performance benefit.

### Application

The deadlift has many benefits. As a compound exercise, the movement spans three joints with extension occurring at the hip, knee, and ankle joints, thus utilizing several large muscle groups. When compared to isolation exercises, compound movements that involve larger muscle groups elicit a hormonal training response that results in greater strength gains. The dynamics of the lift itself may also lead to greater gains in hypertrophy.

The deadlift also has possible rehabilitation benefits. It has been hypothesized that the moderate to high hamstring activity elicited during the deadlift may help to protect the Anterior Cruciate Ligament during rehab.

### References

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