Journal of
Yoga and Physiotherapy
ISSN: 2476-1303

Juniper Publishers
key to the Researchers

Mini Review
Volume 6 Issue 1 - August 2018
DOI: 10.19080/JYP.2018.06.555676

J Yoga & Physio

The Deadlift - Part 2

Luke Delvecchio*

School of Medical and Applied Sciences, Central Queensland University, Australia

Submission: June 18, 2018; **Published:** August 22, 2018

***Corresponding author:** Luke Delvecchio, School of Medical and Applied Sciences, Central Queensland University, Rockhampton, Australia, Email: l.delvecchio@cqu.edu.au

Introduction

In the previous deadlift article, we examined the biomechanics of the deadlift, in this paper we will look at muscle involvement in the deadlift. The conventional deadlift involves movement patterns (hip hinge) which occur in activities of daily living (lifting objects of the floor), involves a significant number of muscle groups in both the upper and lower body [1]. Also, the deadlift is routinely performed by athletes in both strength-based and non-strength based disciplines alike. During a deadlift, the lifter commences the lift in a squat position with the knees and hips flexed approximately 80-100 degrees [2]. The arms are held straight and pointing down, and a standard or alternating hand grip is used to hold a barbell positioned in front of the lifter's feet. The barbell is then lifted upward in a continuous motion by extending the knees and hips until the lifter is standing erect with knees locked and the shoulders thrust back. From this position, the barbell is slowly lowered back he lifter in a squat position with the knees and hips flexed [2]. Considering the complexity of this exercise, it is important to understand some of the key anatomical features of this exercise. Generally speaking, the deadlift utilizes the muscles of the lower limb, trunk, and upper limb. More specifically, at the commencement of the lift the gastrocnemius and soleus undergo concentric contraction to plantar flex the ankle [3], as the bar continues to be raised, the quadriceps (vastus group and rectus femoris) concentrically extend the knee as the bar is lifted further [1]. At the hip, the gluteus maximus and hamstrings (semimembranosus, semitendinosus and biceps femoris) begin to contract as knee extension is completed [1]. In the trunk, the obliques and rectus abdominals contract to maintain spinal stability, while the erector spine (iliocostalis, longissimus, and semispinalis) deep spinal extensors (multifidus) undergo concentric contraction to bring the spine into an upright position. Finally, the scapula stabilizers contract isometrically to prevent upper back flexion, whilethe lat's plays a major role in stabilizing the bar, preventing it from rolling forward during lift-off [4, 5]. Interestingly, little research has investigated the muscle recruitment levels of the upper limbs, including the forearm muscles. However, it is well known amongst strength and conditioning coaches that grip strength plays an important role in overall deadlift performance. Together, these results suggest the deadlift recruits many large muscle groups in the lower body and trunk, making it an ideal exercise selection when targeting whole body strength.

The Sumo Deadlift, a variation of deadlift performed with a wide stance, and hand placement inside the knees (as opposed to outside the knees in a conventional deadlift). The sumo deadliftis considered by some researchers to be amore biomechanically efficient lifting technique, due to the shorter distance the bar travels. Also, the sumo-deadlift, due to its more upright back position may reduce shearing forces on the lower back [6,7]. Previous research has shown in comparison to a conventional deadlift; the sumo-deadlift activates both the medial and lateral quadriceps (values medial and lateral) and, the anterior tibialis. In contrast, the conventional deadlift showed greater, calve (medial gastrocnemius) and erector spinaeactivity. Interestingly, research suggests hamstring and glute muscle recruitment does not differ between techniques. In summary, it appears the major difference between a sumo and conventional difference lies in the quadricep and calve muscle recruitment, with the sumo deadlift appearing to more effectively target the quadriceps and tibialis anterior, while the conventional deadlift is appearing to be more efficientfor calving muscle recruitment. Taken together, the results of the studies suggest suitable differences in muscle recruitment exist between the conventional and sumo deadlift, with the sumo deadlift with its lower spinal loads and shorter bar path potentially offering a more suitable deadlifting technique for those with a history of back troubles

For FTI instructors and practitioners, the practical implications of these studies are:

a. The deadlift is an ideal exercise selection for building whole body strength because of the contribution the large muscle groups play, to perform the lift.

b. The deadlift is also an ideal exercise to strengthen the lats';due to the important role, the muscle plays in preventing the bar moving forward during the initial stages of the lift.

c. The deadlift is a closed-kinetic exercise which generates moderate to high co-contractions of the quadriceps, hamstrings and calves muscles; making it a suitable exercise choice during a knee rehabilitation program.

d. While subtle differences exist between the sumo and conventional style deadlift, the major benefits of a sumo deadlift appear to be the lower shear loads on the lumbar spine and the shorter distance the bar travels.

e. For these reasons (shorter bar path and lower spinal loads) the sumo-deadlift may be more appropriate for a client with a history of back pain.

f. More researcher examining the extent of forearm and upper arm contribution to the deadlift is needed.

References

1. Farley K (1995) Analysis if the conventional deadlift. Strength and Conditioning Journal 15(2): 55-58.
2. Escamilla RF, Francisco AC, Fleisig GS, Barrentine SW, Welch CM, et al. (2000) A three-dimensional biomechanical analysis of sumo and conventional style deadlifts. Med Sci Sports Exercise 32(7): 1265-1275.
3. Escamilla RF, Francisco AC, Kayes AV, Speer KP, Moorman CT (2002) An electromyographic analysis of sumo and conventional style deadlifts. Med Sci Sports Exerc 34(4): 682-688.
4. Noe DA, Mostardi RA, Jackson ME, Porterfield JA, Askew MJ, et al. (1992) Myoelectric activity and sequencing of selected trunk muscles during isokinetic lifting. Spine 17(2): 225-229.
5. Rippetoe M, Kilgore L, Bradford SE (2007) Starting Strength: Basic Barbell Training (2nd edn). Aasgaard Company, Wichita Falls, TX, USA.
6. Siewe J, Rudat J, Röllinghoff M, Schlegel UJ, Eysel P, et al. (2011) Injuries and overuse syndromes in power lifting. Int J Sports Med 32(09): 703-711.
7. Cholewicki J, McGill SM, Norman RW (1991) Lumbar spine loads during the lifting of extremely heavy weights. Med Sci Sports Exerc 23(10): 1179-1186.

DOI: 10.19080/JYP.2018.06.555676