Sample research paper on movement in sport: the dead lift

Education

Movement in Sport: The Dead Lift

I choose to use professionals to perform the deadlift since it requires a serious monarch in the physique building kingdom. The movement hits someone’s glutes, upper lats, quads, erector, and abs. Most people do not like performing this movement since it is one of the extreme physiques. Additionally people are yet to observe a professional perform this movement in the presence of a novice lifter. This paper will provide beginner trainers that look to advance their physique development with adequate information and descriptions so that they can perform the movement with ease.

In the study, I have observed Johnnie Jackson the Texas pro that won the Montreal Pro Classic award and Atlantic City Pro in 2007. The world of sports considers him as an accomplished sport his life he has been able to train deadlift more than 770 pounds prior to him becoming a pro bodybuilder. Johnnie reckons that this movement enables him to develop the thickness on the back legs, chest, shoulders, and gain the bulk of the size. He trains like a power lifter in the total-body exercise.

a) Inhale by taking a deep breath before pulling off the floor to increase torso stability and benefit from an increase in strength generation of muscles that lift heavy weights.

b) Maintain the bar close to the body in a range of motion

c) As one pulls off the floor, one should straighten the legs and keep the back flat close to the body while arms are straight.

Johnnie performs the two types of deadlift that include conventional and sumo method. As he performs the movement, the stance compares to shoulder with apart as the feet points ahead. He lowers until quads become

parallel to the floor. The bar goes ahead of the shin. Later, he grips the barbell with both hands to ensure a tight outside the legs. He attempts to hang on the sides while he avoids a bicep tear. He locks the shoulders and knees while hanging on a straight completion

Johnnie performs Sumo in a variation that will reduce stress on the lower back. The difference between sumo and conventional styles is grip, star pull, and foot positioning. The sumo style requires hamstring, hip flexor, and a glut

Abstract

Deadlift, bench press, and sit on your heels do not leave room for error since it ensures injury-free weight exercise. Sandler (2005) deadlift method is the best strength lifter method. The art of dead lifting produces one of the best competitions that inspire the display of strengths. According to Sandler (2005), lifting an object is the best way to exemplify the strength. Lifting techniques has a noteworthy effect on spine loading when lifting. Sports biomechanics literature documents changes in low and trunk extremity kinematics and muscle co-activation patterns as the function during the high force deadlift and squat exercises.

This paper will discuss lifting stance width effects to translate to occupational settings in moderate load conditions. The study selects twelve subjects that perform repetitious sagittally symmetric lifting and lowering exercise. The twelve subjects perform the dead lift under three different conditions that include feet together, feet shoulder width, and wide. As the subjects perform the exertions, trunk kinematics capture via lumbar motion. The author

examines the trunk muscles and lower extremity muscles and evaluates them using normalized electromyography.

Introduction

Joyce (2012) defines deadlifting as a multi-joint resistance performed in various training environments. Deadlifting starts with the subject in hunker down position, with straight arms that face downwards to alternate the handgrip on the bar. Additionally, a subject extends the knee and the hip until the knee, and the body reaches an upright position. Some of the muscles in use during the lifting exercise include erector spine, quadriceps, rhomboid, gluteus maximus, finger flexors, and others.

Sorensen et al. (2011) note that the exercise as a closed chain in nature can prevent and rehabilitate anterior cruciate ligament (ACL). ACL can improve strength of the muscular structure around the knee to provide dynamic stability. Many authors contend that low back pain is a widespread muscle skeletal pain complaint in the occupational settings. Sorensen et al. (2011) approximation on the compensation of low back pain cases averages $88 billion in 2007. Employees working in the industrial sector are prone to different risk factors such as awkward trunk postures, forceful movements, and heavy physical work. The lifting technique has the ability of changing the exposure level to the risk factors by changing trunk posture and moments generate an external load. Deadlifting is a major discipline in power lifting. Sorensen et al. (2011) studies the biomechanics of lifting extensively during competition that focuses on conventional styles. Sorensen et al. (2011) indicate a high potential to increase the force toward the end of dead lifting. Training using the exercises relate to the functional adaptation of spine as

the loads of the lifters correlate with bone mineral content. An increased forward tilt while deadlifting can predispose one to risk of muscle-skeletal pain. To rectify the problem Sorensen et al. (2011) says that an upright trunk will reduce anterior shear force at lumbar joint. Different authors debate on the best sites on your heels technique while they ignore the lifting stance width. Different number of studies in the sport and exercise sector assert on noteworthy differences between lower extremities and low back with a varied stance on the power lifting exercises. The professional lifters keep the barbell mass closer to the body than less skilled lifters. The study considers the powerlifting champions noting that the subjects participating in the event perform deadlift exercise. Subjects adopt a wide stance style than conventional stance deadlift.

A study of 12 wide stance and 12 conventional styles of dead lifting professionals inform of a 5 to 10 degree reduction flexion of wide stance participator in comparison to a conventional stance. The study of the squat exercise reveals that gluteus muscle has a heavy load in wide stance conditions, unlike a traditional stance width. Sandler (2005) reveals that trained power lifters perform a dead lift exercise. The deadlift training entails lifting a barbell load from the ground to mid-thigh height. A wide stance style has a high force in comparison to the conventional stance. The study of 12 conventional style deadlift professionals and 12 wide stances make different observations.

Methods

The objective of the study is to investigate the effects of stance width on the kinematics and muscle activation patterns. The author depicts hypotheses

that stance width can change the muscle activation levels at the trunk and lower extremity musculature. Another hypothesis is that a wide stance can reduce the value of sagittal plane acceleration in the lumbar spine.

The study uses Lumbar Motion Monitor to activate trunk kinematic data and the muscle activation profiles. The data collection apparatus has a trunk angle, trunk angular velocity, traverse planes, coronal planes, and trunk angular acceleration. The study analyzes plane kinematics. Data collected via electromyography at 1024 Hz.

The subjects should lift good coupling 10 kilograms plastic crates. It is a prerequisite for the subjects to keep their toes against a block to maintain a consistent positioning of the load in relative to the lifter. The experimenter has wooden platforms developed to set the crate at hand heights. Subjects should perform dynamic trials using natural lifting techniques. The study aim is to investigate stoop or squat activity and its effect on the special lifting technique.

In the experimental design, the independent variables include load height, stance width, and stance height while the dependent variables include eccentric, concentric, and peak sagittal deceleration. Participants should familiarize themselves with LMM for some time and lift the box while feet align with three stance width conditions. An electromyography data could process the raw data. Numerator of NIEMG is at steady state prior to averaging the normalized values.

Theusesmonitoranddeterminethegreatestsagittalanglea participantbendsdownliftttheloadandthesagittalanglegreatestsagittalanglepar ticipantbendsplaceloadtheground To in LMM experimenter subtracts,

baseline andforeverysubject The LMM provides information concerning peak angles and accelerations during concentric and eccentric lifting motions. The experimenter defines the peak acceleration of the lifting phase as the peak acceleration while peak deceleration is the peak acceleration of eccentric lifting motion (Sorensen et al. 2011).

The experimenter conducts statistical analysis of the information using SAS method. The study assumes ANOVA procedures, constant variance of residual assumption, and non-correlation of residues. ANOVA assumptions help to transform dependent variables. The experimenter uses Multivariate analysis of data to measure the wise error rate. The significant independent variables in the MANOVA exhibit extensive tests in ANOVA. A post-hoc test explores the significant main effects in all statistical tests.

Results

Analysis of the data from static weight-holding trials reveals that the interaction between stance width and load height does not have a noteworthy effect on the NIEMG of muscles investigated. Similarly, load height does not have any significance on the NIEMG values for all muscles under consideration. The response of the experiment illustrates a flexion relaxation phenomenon in relation to low muscle activity at a low load positions while having a consistent increase in the activity at the lower load positions.

The analysis of the data from dynamic lifting tasks reveals a significant stance width to affect all the kinematic dependent measures to indicate a significant impact of stance in the lifting technique in use throughout the experiment. Subjects use a lumbar sagittal flexion strategy in the narrow

stance condition in comparison to a wide stance condition. A moderate distance as the participant lifts the load does not attribute to inference of the knees and the crate during lifting. The authors observe a small reduction in the sagittal angle as the stance increases from shoulder width to a wide stance condition. In view of peak acceleration, data from lifting and lowering exertions show a strong impact on the stance width on the magnitude of the acceleration or deceleration. At the lift phase, the author observes a wide stance condition to generate peak acceleration of 80 percent in the narrow stance condition. In the period of lowering phase and peak deceleration, the authors observe 85 percent on a wider stance in comparison with the narrow stance interval.

Considering kinetics, the authors do not see any significant change between two loading conditions on the barbell and the knee in the sagittal plane. A slight change in the trunk position will modify the sagittal moments to negate the effect on the extra load. Subjects manage to prevent additional loading at the knees. A hip flexion movement expects to increase significantly with additional weight on the barbell. A mean normalized moment and standard deviation in the sagittal plane on the knee and hip region corresponds to the results of other studies. A flexion movement of 25 degrees appears at the knee flexion angle comparable to knee movements that have a high barbell load. Normalized knee movements in the sagittal plane for external knee flexion average repetitions for all subjects during deadlifts that correspond to knee flexion angle. The authors observe the highest sagittal movement in the hip with a 50 percent extra load. The maximum knee flexion angle correspond to a high flexion angle with 50

percent squats extra load. The authors observe large differences in the hip where the flexion movement is above 50 percent.

Deadlifttheadvantagethatmomentthekneesmallcomparisonmomentthehip

Discussion

Different authors performing the same experiment state that the force ratio of the quadriceps to hamstring is a risk factor for anterior cruciate ligament rupture. The issue is noteworthy in women compared to men. The training of multi-joint muscles corresponds to the joint angles on the hip and the knee. The finding of the author demonstrates the importance of hamstring training that wills potentially anterior cruciate ligament that includes a preventive measure.

The execution of extra weight on the barbell does not have an effect on thoracic curvatures, maximal flexion, minimal flexion, lumbar curvatures, and lumbar-thoracic segments. During back training, the author cites that the difference between lumbar curvature in the sagittal plane and concentric phase of lifting is due to 50 percent extra weights.

Thedifferenceexercisesandmechanicsthelowerlimbsappearmorerelevant To optimize the training effect of the quadriceps, large RoM, and external flexion moment are a prerequisite. The authors observe higher moments in sagittal plane and load dependency during squatting.

The experiment is important since it evaluates the effect of the stance width on the systems biomechanics of the low back and the lower extremity. Based on the results depicted in the exercise science literature the hypotheses tests true. The authors observe that a wide lifting stance can affect the interaction between low back and lower extremity in kinematics and muscle

activation levels.

The results show a significant change in the sagittal plane kinematics while no effect on the muscle activation levels on the stance width. A possible reason for the null effect on muscle activation is the amount of weight lifted. The study uses a weight of 10 kilograms. Much of the exercise science literature investigates the effect of stance width on lifting biomechanics used considerably on larger loads. Different authors observe an increase in deadlifting activity that has a wide stance on the lower load levels. Another factor that leads to inconsistent results in the standardization of lifting technique is the control of the professionals that like a highly developed technique.

Different authors use experienced weight lifters that use similar mechanics for each lift. In this experiment, the participants do not require training in require them to perform lifting in a specialized style. The experimenter instructs the participants using a natural technique while they applied stoop or squat style or another one in between. The variability in technique leads to high degrees in the variability of the trunk muscle activation levels that make it difficult to depict significant differences. Static weight holding data reveal significant differences among load heights.

The ES shows significant findings as height increases due to the passive tissues of the low back account for a flex to indicate an activation of flexion relaxation phenomenon.

Trunk kinematic variables to identify predictive low back injury risk quantify changes in the variables to controllable lifting task parameters. The study interacts between kinematics on the low back and the lower extremities with

potential to affect the posture. Lumbar kinematics data gathered in the current study supports the notion to demonstrate wider stances with an upright trunk postures.

Limitations of the study

The results of the study present a generalization of different limitations. (1) Manual materials handling experience of the subject population has limitations together with variables. The participants are graduate students with varied backgrounds in manual materials handling that lead to variability in levels of lifting technique maturity to lift performance/ muscle co-activation patterns. The comparison between results with the experienced weight lifters, it is difficult to predict the significance of a change in muscle co-activation due to stance width. (2) Most of the exercise science-based studies that fail to show change in muscle activation since they require higher lifting forces. The 10-kilogram load is not a sufficient to elite stance in width dependent responses. Future research can use an increasing load to identify the formation of biomechanical responses. The future research should also focus on lifting frequency and the duration of two variables, that can influence trunk kinematics leading to local muscle fatigue.

Conclusion

The finding of the study shows that lifting stance width and has a significant effect on lifting kinematics used. One can note that statistical significant differences in the muscle activation levels to function as a variable. Wide stance reduces the peak sagittal angle and peak sagittal plane-acceleration during lifting and lowering motions. To during lifting. Quantifying the impact

of stance width is a crucial variable that can provide insight in the workplace design strategies to reduce the risk of low back injury. The author of the study informs that deadlift training exercise is crucial human movements that can benefit everyone when one pull the floor. The deadlift variations will assist in sports performance, fat loss and physique. The movement will help the trainer to build stronger posterior chain, reduce fragile joints where one handles whatever life throws at you.

References

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