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Research on the Training Methods of Olympia Lifting

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Abstract: To incorporate Olympia Lifting and its derivatives into training for improved sports performance, there is an evident scientific basis from both practical and scientific perspectives. As sports performance professionals gain more knowledge in the planning and design process, it becomes necessary to understand more about Olympia Lifting to provide the most effective exercise recommendations. Therefore, this paper focuses on the training method of Olympia Lifting. After reviewing literature, it can be concluded that Olympia Lifting and its derivative exercises are not only for specific sports, but can also be used as an effective complement to other components of comprehensive training.

Keywords: Olympia lifting technique, exercise performance enhancement, explosive power and resistance training, hip-hinge, SAID (Specific Adaptation to Imposed Demands)

1. Introduction

Olympia Lifting itself is a sport that includes the lifts of snatch, clean and jerk. While these derivatives of Olympia Lifting enhance explosiveness, such as power snatch, power cleans and squat snatch, and muscle cleans, squats, and deadlifts, are more popular among athletes and sports performance professionals. One reason for the wide acceptance of these derivatives is that many athletes cannot achieve the required depth in squats for standard Olympia Lifting. Sports performance specialists need to be aware of how an athlete's capacity for Olympia Lifting and its variations is influenced by characteristics like flexibility, mobility, stability, posture, and neuromuscular control. Additionally, individuals often perform Olympia Lifting with incorrect technique, reducing its effectiveness and potentially leading to compensation or injury. The focus of this study will be on the techniques and considerations required to safely and effectively perform Olympia Lifting in the athletic performance program.

2. The Scientific Basis of Olympia Lifting

2.1. Olympia Lifting and Resistance Training

Contrary to some of the conventional knowledge and common practices of athletes about performing Olympia Lifting, there is good evidence that Olympia Lifting has better effects on muscle strength and performance than traditional slow, heavy weight training [1]. This may illustrate the fact that different training methods can help athletes achieve similar results. Rather than viewing Olympia Lifting as an "either/or" training pathway, sports performance professionals

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should view it as one of many tools to improve the explosive power of athletes. Prior to undertaking Olympia Lifting, the individual athlete should be evaluated and Olympia Lifting applied in a comprehensive training program based on his/her needs and goals.

2.2. The Principle of Specificity of Training

Practice selection is one of the key variables that must be considered in any program design [2]. Therefore, exercises chosen to improve motor performance in a particular sport item should be SAID (Specific Adaptation to Imposed Demands) in principle. DeLorme first proposed the concept of specificity in 1945 [3]. Bompa explains this principle by articulating that practice forms for skill groups that target specific sports will lead to more rapid improvements in motor performance [4]. Siff noted that at least 10 factors, including movement speed, contraction force, muscle fiber recruitment, movement pattern, muscle contraction type, movement area, metabolism, biomechanical adaptation, flexibility, and exhaustion, must be taken into account when thinking about the concept of specificity.

Olympia Lifting is an excellent workout set for programs aimed to improve explosive power because explosive force is essential to the success of countless sports. According to the SAID principle, "seven independent qualities contribute to an athlete's explosive power: maximum strength, high-load speed strength, low-load speed strength, force generation rate, reactive strength, skill performance, and explosive endurance," and Olympia Lifting has been demonstrated to improve many of these qualities. Sipher went on to explain why people often confuse simulation training with the principle of specificity, stating that the SAID principle's goal is to improve variables that are particular to an athlete's demands in their athletic program. Using elastic bands, elastic ropes, or weight bearings to offer low resistance so as not to interfere with brain activity patterns, simulation training is the mimicking of certain motor item skills. Olympia Lifting develops certain factors required to enhance performance in sports that need for explosive power, even if it does not mimic many athletic skills. In actuality, the power snatch and snatch second bell-lifting session demonstrated a stronger explosive production than any resistance exercise. The two exercises alone will increase movement speed, high-load speed force, and force generation rate, whereas squats, deadlift cleans, and deadlift snatches will raise maximal force. In this sense, Olympia Lifting is a legitimate exercise option in program design because it adheres to the SAID principles.

2.3. Patterns and Regions of Action

The SAID principle acknowledges, to some extent, that to improve motor performance, an exercise must possess movement patterns and areas of action similar to the target motor skill. Olympia Lifting meets these criteria through the Universal Athletic Position (UAP). UAP is the most common posture in all sports. It is relatively easy to think of it as a static starting position, such as the preparation position of a linebacker in football or the defensive position in baseball. It can also be dynamic such as the pre-squat jump or the second lifting phase in snatch and muscle clean. This posture is described as standing in a quarter squatting position with feet flat on the ground, weight on the ball of the foot, hips back, knees above the toes, shoulders above the knees, and a neutral spine.

UAP provides a posture that generates maximal force from the hip, one of the area-specific variables, due to the "ability of postural regulation to generate force," which is one of the area-specific factors. The athlete must display explosive power without moving the spine, which must be neutral and stable in order to produce the most explosive power through the hips, knees, and ankles. The powerful hip muscles can explode and lift the bar vertically when Olympia Lifting

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is done properly, creating UAP between the first and second lifting phases. Olympia Lifting empirically boosts UAP's explosive power, which enhances athletic performance.

2.4. Hip-Hinge

The spine must be stable and neutral to produce vigorous lower limb movement. Therefore, athletes must learn to separate hip movement from spinal movement. The concept of hip hinge can be described as the hip joint movement occuring while the spine remains stable and neutral.

This movement pattern is learned cognitively, starting with only body weight as resistance, and progressing to Olympia Lifting by using loads to strengthen the hip hinges.

3. Analysis of the Training Methods of Olympia Lifting

3.1. Flexibility

The athlete needs to be able to hold a deep bar position in order to do the full Olympic lift (snatch, clean, and jerk). The plantar flexor, knee extensor, hip extensor, elbow extensor, and wrist flexor muscles must all be as flexible as possible for this. The joints involved must also demonstrate total flexibility in addition to the required flexibility of the muscular tissue.

For example, the maximum Angle of ankle dorsiflexion is 20 degrees, the maximum Angle of knee flexion is 135 degrees, and the maximum Angle of hip flexion is 120 degrees. Full depth cannot be obtained if any one of these joint ranges is restricted, and compensation may result. When only snatch and squat clean are considered, the athlete must be able to make a full-depth catch pose. If the normal ankle dorsiflexion Angle is 20 degrees, it is difficult to ensure that the weight does not shift back too much during squat clean and snatch positions. In order to make a full-depth catch position, sometimes use a professional lifting shoe with a little heel. If no weightlifting shoes are used and dorsiflexion is limited, training should focus on power cleans and power snatches rather than full-range weights. These lifts use higher catch positions and do not require full ankle dorsiflexion, knee flexion, or hip flexion. To improve the malleability of the posterior calf muscle group and the Angle of ankle dorsiflexion, flexibility techniques should be practiced in order to perform full Olympic lifting with less compensation.

In the second illustration, the snatch and jerk exercise, which necessitates complete shoulder flexion during the catch phase, is used. In this exercise, the bar is held precisely above the head. Because the latissimus dorsi muscle is related to the lower back via the thoracolumbar fascia (TLF), limiting shoulder flexion owing to latissimus dorsi tension can result in overcompensation (excessive lumbar extension) in the lower back. This puts more strain on the lumbar spine and raises the risk of damage. In such circumstances, the athlete might be forced to make a compromise by using a lifting variation of the snapper and avoiding the upper lift (no overhead movement), while incorporating flexibility techniques into his training regimen to improve the extensibility of the latisse dorsi and thereby expand the range of motion of the shoulder joint.

3.2. Stability

Siver described all dynamic movements as having a "three-phase" character: first, a steady contraction. It then contracted centripetal and finally centrifugally. All human movements begin with a steady contraction. The human motor system consists of local global stabilizing muscles, and global prime mover muscles. In functional movements, such as free weight lifting, both local stabilizing muscles and global stabilizing muscles must be recruited prior to movement in order to perform the movement safely. Hodges and Richardson proposed the need for an abdominal drawing-in maneuver to activate local stabilizing muscles, while McGill proposed tightening the

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abdomen as a method of providing trunk stability (activation of global stabilizing muscles) . Some recent studies have found that co-contraction of trunk antagonistic muscle groups increases spinal stability during weight lifting tasks, and one study suggested that another benefit of co-contraction of trunk antagonistic muscle groups may be better control of the path of the object being lifted. Given the importance of maintaining a neutral, stable spine in weightlifting tasks, these two stability cues are essential prior to any Olympia Lifting exercise, whether starting from the ground, jumping, or hanging. Prior to competing in any Olympia Lifting, athletes must have this neuromuscular control to assure the sport's security and efficacy. One of the reasons stability training should come first before strength and explosive training is because of this. Olympia Lifting is a fantastic step-up training program that enables lifters to include stability signals into dynamic motions that must be developed mentally once neuromuscular control is acquired. Multiple repeats of this process over time will reinforce it, forming brain pathways that grow more automatic as they happen less consciously. The load can be raised, allowing for higher strength gains to the core local system as well as the general system, after the athlete masters the ability to stabilize the trunk and can execute the lifting technique correctly.

Another important stability cue before lifting the barbell in any starting position is the retraction of the scapula [2]. On the one hand, co-contraction of the trunk antagonistic muscle groups helps to stabilize the spine, and on the other hand, scapular retraction enhances the overall stability of the spine and the local stability of the glenohumeral joint. In addition to this, Olympia Lifting coaches recommend contraction of the latissimus dorsi muscle to control the path of the barbell and keep it close to the body.

3.3. Posture

Lifting weights is made simpler by good posture because it lessens the stress and shear pressures on the spine, which improves the biomechanical advantage. The maximum level of spinal stability, biomechanical benefits, and effective muscle activation during weight lifting are all provided by the neutral triple curvature spine posture. A 2007 study found that the integral spinal extensor muscle contraction along the curve significantly reduced muscle force and spinal compression, but increased shear force at L5 to S1. This study also found that decreased lumbar curvature decreased load and shear force at L5 to S1. This implies that there isn't a single, ideal neutral posture that supports all human activities and jobs and that the neutrality really fluctuates a little bit depending on the task. In order to train the neuromuscular system to precisely and effectively replicate proper weightlifting postures, high repetitions and low loads must be used. Injury and poor athletic performance may result from bad posture. Athletes who are unable to adopt the posture required to pick up a heavy object off the ground could raise the object using wooden blocks to vary its starting position before practicing flexibility and stability drills to manage their posture. The three trunk stability tips (concerning pelvic floor, oblique, and scapular contractions) should be redefined before beginning Olympia Lifting or any explosive sport in order to improve improper posture. The original exercise can be resumed. Lack of postural control may also indicate a lack of flexibility, stability, or both in the athlete, and may require the removal of these weight-lifting exercises from their training program until these qualities improve.

3.4. Neuromuscular Control

The primary motions in Olympic weightlifting and its offshoot activities, which are functional closed-chain workouts, take place in the frontal and sagittal planes. But in all three planes, stabilizing control is present. Correct Olympia Lifting requires complete neuromuscular control since any deviation from the anticipated movement pattern raises the risk of the human movement

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system failing. Lifting weights is an inefficient system, and adding external stress simply makes it worse and increases the risk of damage.

The lumbar spine and sacroiliac joints in the lower back are stabilized as the thoracolumbar fascia distributes weight between the upper and lower bodies. According to Vleeming et al., the thoracolumbar fascia may serve as a functional link between the latissimus dorsi and the gluteus maximus. In Olympic weightlifting and vertical leaping, the proper proximal-to-distal neuromuscular activation sequence involves core and trunk stabilization, hip extension, knee extension, and plantarflexion. The timing and force of the muscle contractions are combined in this sequential activation pattern. The strongest muscle activation is in the hip extensors, and it gets weaker as it progresses down the power chain to the knee extension and plantar flexion positions.

There are many questions about whether an athlete is functionally qualified to practice Olympic weight lifting that can be easily determined using overhead squat and single-leg squat assessments. If compensation is found at the time of the evaluation, Olympia Lifting may not be a viable option unless movement deficits are corrected. Once corrected, the athlete will be more effective in generating force (through optimal length-tension relationships and couple relationships) and reduce the risk of injury [5].

4. Conclusion

Olympia Lifting and its derivative exercises have always been popular training forms for improving sports performance. Olympia Lifting should not be considered the most important part of a training plan, just as it should not be seen as the sole representation of an individual's athletic abilities. These weightlifting exercises are designed specifically for certain sports. However, there is enough evidence to suggest that these weightlifting exercises and their variations can be effective supplements to other components of comprehensive training. Whether used to seek improvement or address issues faced by athletes, Olympia Lifting contributes to enhancing sports performance. Professionals need to ensure effective program development and proper execution of techniques in order to maximize gains and avoid potential injuries associated with these weightlifting exercises. The goal of this training form is to improve maximal strength and explosiveness to meet the demands of sports. It is important for athletes to have the necessary prerequisites for safely and effectively performing Olympia Lifting before starting a program. Flexibility, stability, and neuromuscular control should be established prior to participating in an Olympia Lifting program. Appropriate technical guidance and stability cues should also be provided before increasing the intensity of these weightlifting exercises. Based on the adaptations they generate, these weightlifting exercises can be used to develop maximal strength and explosiveness. Lastly, although the scientific basis of Olympia Lifting is analyzed in this paper, the specific training techniques are not explained in detail, and this training method has not been put into the integrated training model. If Olympic weightlifting can be integrated into a systematic training model, it will enhance the practical value of the whole model.

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