

Scientific debate between two main athletic training methods: Powerlifting and Olympic lifting.

Prof. Hamdy Abd El-Maksoud El-Gazzar⁽¹⁾

(1) Prof. at Faculty of Sport Education, Alexandria University Department of Training Combat and Individual Sports

Introduction:

In the world of strength training, there are numerous methodologies that are used to increase the performance of athletes. Olympic lifting and power lifting tend to be the most popular philosophies for coaches to incorporate because of their focus on power and strength development. With their proposed popularity comes a little controversy. Many Olympic lifters and power lifters proclaim their style of training as the “method of choice” for training athletes. Each method of training elicits a unique training philosophy, program, and outcome. For instance, “Olympic-style weightlifting is an excellent training method for developing power”. It consists of two movements—the “clean and jerk” and the “snatch”. The derivatives of those movements are what make up the majority of the training exercises [4]. Unlike its name, powerlifting is a training method that focuses on maximum strength. “Power lifting is centered on the three competition lifts of the squat, bench press, and the dead lift; powerlifting develops strength in almost all major muscle groups” [8]. The question that many strength and conditioning professionals and personal trainers try to answer is, “Which method is best to use when training athletes?” This article will try to answer that very question with responses from two elite strength athletes. Phil Sabatini is a nationally ranked Olympic lifter who is also the football strength and conditioning coach for the Virginia Military Institute. Monte Sparkman is a nationally ranked powerlifter who is the powerlifting coach for the Virginia Military Institute’s power lifting team. Their candid responses to the upcoming questions will be used to understand the position of each style of weight training and determine the most desirable

method to use when training athletes. Therefore, each respondent will answer six questions that are designed to provide insight into the training philosophy and training methodology for each discipline of weight training.

Absolute strength is the foundation for all other strength abilities. “Absolute strength controls all strength gains. Analysis of Hill’s equation shows that speed of movement is dependent on absolute muscular strength: $V = Ft/m$ ” [10][11][12]. Absolute strength controls all strength gain [14]. From this statement, we can assume that the most important aspect of athletic development should be focused on the training of absolute strength. Powerlifting is rooted in this philosophy. Powerlifters are constantly training to develop absolute strength and explosive strength. They understand that without this basic strength, training cannot progress.

Powerlifting methods make the training of absolute strength a priority. It is the view that strength and conditioning coaches across the board do the same. Too many strength and conditioning coaches are quick to implement Olympic lifting methods into their training programs without first developing an athlete with a strong foundation of absolute strength training. This opinion can be supported by a statement from Vern Gambetta’s book, *Athletic Development—The Art & Science of Functional Sports Conditioning*. “While It has been become very popular among the strength coaching community, to center strength training programs on Olympic lifting” [3]. In the opinion of Gambetta, this is putting the cart before the horse. It is not appropriate develop an explosive athlete without first satisfying this common need for the development of absolute strength [4].

Figure (1). Powerlifter heavy weight



The most important aspect of Olympic weightlifting as it pertains to athletic performance is power specific force development or “speed strength.” Olympic style training involves “using heavy loads that are performed at a high velocity resulting in a high-power output” [4] [5]. The term speed strength combines two very crucial attributes

of athletic performance to express “power development.” An athlete’s power capacity includes “maximum strength, high load speed strength, low load speed strength, rate of force development, reactive strength, skill performance, and power endurance” [5].

Figure (2). Olympic weightlifting - Snatch Lifting



Through the training of Olympic lifts, athletes can increase their speed strength. This is done specifically because “during the pull phase of the clean and snatch as well as the drive phase of the jerk athletes extend their hips, knees, and ankle joints to push against the ground as hard and as rapidly as possible producing acceleration on the body and the barbell, which is done remarkably similar to jumping” [5] [7] . Also, functional core strength is developed due to the large amount of overhead activity and movements with high loads away from the body’s center of gravity. Different training methods are used to increase performance by becoming stronger and faster. Specifically, different sports require different demands. One sport may ask, “How strong?” Another may ask, “How fast?” However, in terms of Olympic weightlifting, the question becomes, “How fast are you strong?”

It is known that “Athletic activities are usually requiring quick and powerful movements, and, thus consequently depend on the development of explosive strength” [9]. If an athlete wants to enhance explosive strength, he must train absolute strength. The most important aspect of powerlifting is the development of absolute or maximal strength. According to the confirmation to Zatsiorsky, maximal strength is regarded as a prerequisite for a high movement speed” [14]. This statement confirms the belief that an athlete must first develop maximal strength and make it a priority in training over high velocity movements in order to develop explosive strength. Power lifting is a superior way for training athletes because it addresses this common need for developing absolute strength. Without a training foundation rooted in absolute strength, there is no potential for explosive strength development. Many strength professionals regard Olympic lifting as the method of choice for

training explosive athletes. If that is the case, why are so many strength and conditioning professionals concerned with developing absolute strength? You must have the absolute strength foundation before any explosive strength development can occur [8] [14].

Another reason that powerlifting training methods are superior to Olympic training methods is the trainability of the movements. “To achieve optimal returns, you must consider that Olympic lifting is a sport. Those lifts have a high technical demand, but the skill is a closed skill that occurs in a narrow range of motion. The Olympic movements do produce tremendous power because of the distance the weight must travel and because of the weight and speed requirements, and this power production is highly dependent on the technical proficiency of the performer as an individual lifter” [3]. The above quote illustrates the disadvantages and technical complications that are involved with Olympic style training. For athletes to reap the benefits of Olympic lifting, they must be sound technical lifters. Not only that but the athlete must be able to move a significant amount of weight relative to his body weight in order to produce a positive training effect. There aren’t enough qualified strength and conditioning coaches out there with the time or staff to properly give athletes the coaching they need to become proficient in the Olympic lifting exercises [4] [5] [6].

Olympic lifting is a better approach for training athletes, largely due to biomechanical specificity and speed of the movements [13] [14] [17]. As mentioned earlier, not only do multiple movements in Olympic lifting (snatch, clean and jerk) closely mimic the movements involved in any type of athletic performance, but training the exercises does not compromise any explosive effort, much like the maximal strength training does in power

lifting. Although there is a definite initial explosive movement in maximal strength training or power lifting, the exercises are performed at a slow velocity. Olympic lifting “may be superior to traditional powerlifting training because the exercises, while using heavy loads, are performed at a much higher velocity, which leads to a higher power output” [6] [13]. This higher power output production could lead to a greater effect [4] [5]. If one wants to become more explosive, it is must raise maximum strength”. Coaches who are using power lifting methodologies to train athletes understand this important relationship between explosive strength and absolute strength. [11] [12] [16].

It is also important to note that powerlifting methods are not just about lifting heavy weights. Plyometrics, or reactive training, is becoming increasingly popular in power lifting training as a method to develop explosive strength. “It is essential that explosive strength play a large role in training, as it not only a means of developing absolute strength but also a method of raising physical fitness that is directed toward solving a specific sports task” [10] [11] [1]. By combining absolute strength and plyometrics training methods, an athlete will have a more complete balance of the skills needed to perform at a high level on the field of play [13] [14].

Figure (3). Olympic weightlifting - Snatch Lifting



The basic philosophies used in Olympic weightlifting methods of training are based around injury prevention, power output, metabolic specificity, biomechanical specificity, high rates of force development, and muscle synchronization. Each of the fore mentioned components will directly transfer to the improvement of athletic performance. Through the training of Olympic lifting, the goal of the training session can be manipulated. Also, because we know greater maximal strength could lead to greater power outputs, maximal strength must be trained. However, when incorporating Olympic lifting, maximal strength can be trained specific to the movement being performed. This can be achieved by training specifically through the use of clean pulls, snatch pulls, Olympic-style back squats, front squats, and other core multipoint exercises [2] [4] [5] [6] [7].

Although Olympic style lifting is viewed by many strength and conditioning professionals is the gold standard for training explosive athletes [1]. It is a belief that in order to maximize athletic performance you must incorporate both Olympic style training and powerlifting style training [3] [5] [15]. Explosive strength is crucial in just about every sport out there, but without absolute strength, explosive strength cannot flourish. Explosive strength and absolute strength training must be

incorporated simultaneously in athletic development to maximize results [10] [11] [12]. This idea can be summed up by Kawamori and Haff [6] [7] who studied the effects of an optimal training load for the development of muscular power. “Additionally, the development of some fitness components (e.g., maximal strength) should be a prerequisite to the development of other components (e.g., speed strength, power). Therefore, it is crucial to train different components in the logical sequence (i.e., periodization) so athletes can maximally develop muscular power toward the end of macro cycle or a yearly cycle when the most important competitions are scheduled while minimizing the risk of overtraining or injuries” [6] [9] [10] [11] [12].

Coaches should not consider powerlifting or Olympic lifting as being better or worse than the other but rather as two pieces of the puzzle working together to enhance athletic performance as stated by Chui [2]. “Rather than one or the other, it is the combination of both maximal strength training and explosive weight training, in a sequenced manner, that will elicit the best results for the strength and condition professional” [2].

Conclusion:

In a perfect world, all facets of training (i.e., power, strength, speed, agility, balance, and conditioning) would be incorporated into an athletic strength and

conditioning program. Therefore, both methodologies (powerlifting and Olympic lifting) are important entities for the development of athletes. Olympic Weightlifting lifting and powerlifting should not be considered competing but rather complimentary methodologies” [2] [9]. A well-rounded training program should not be limited to only one area of emphasis but rather should incorporate all components that are specific to the athlete’s sport or activity. Although the philosophy of training may be different, the goal of training athletes should be the same. Enhancing performance and reducing injury should always be the centerpiece of strength and conditioning program [1] [8].

Important Hints:

1. The adaptation of both major training methodologies could illicit a greater return because

both parameters are being trained (maximum strength and power). It is the inclusion and variation of training variables that will give added benefit to the athlete versus the exclusion and elimination of competing methodologies and standards.

2. Too many strength and conditioning coaches are quick to implement Olympic lifting methods into their training programs without first developing an athlete with a strong foundation of absolute strength training; this is putting the cart before the horse. You can’t develop an explosive athlete without first satisfying this common need for the development of absolute strength.

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