

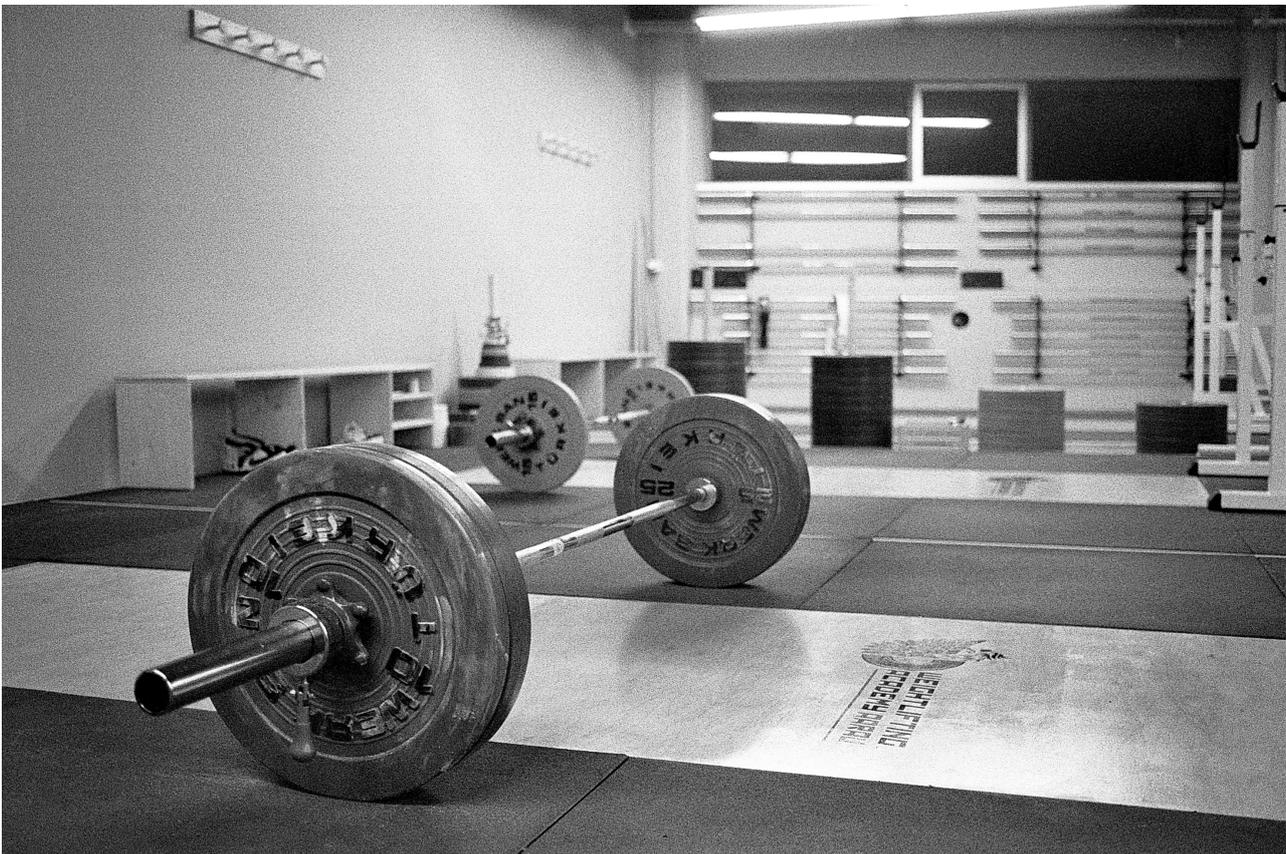
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The application of a variety of exercises and combinations of exercises in order to promote a broad and versatile technical development for weightlifter of all levels.

Emphasis on involving hybrid combinations of exercises to increase coordination, strength endurance, strength and speed

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## Variety of exercises used

Due to the extensive research undertaken by the Russians and the Chinese between 1950 and 1990, we have learned that a variety of exercises and volume builds strength, power and skill. Variety of exercise creates a much larger foundation base from which to grow from in order to enable long term progression and enjoyment in training. It is essential to vary the training stimulus. Repetitive training sessions that are the same over a prolonged period of time should be avoided at all costs. Moreover considerable research shows that it is inappropriate and not advisable to employ primarily “extensive” and load bearing training methods when working with beginners. Applying such methods leads to forcing results and the negative by product is a failure to take into account the functional potential of the organism of a young athlete or late beginners and by receiving the same amount of stimulus it will not help the athletes adaptation to the higher demands to the CNS. <sup>4</sup> As a matter of fact, such methods would not even be suitable for training the reserves of the national teams, much less satisfactory for the pride of a nation.

The standards in weightlifting training are quite high in the countries surrounding Switzerland; therefore simply matching these standards is a feat in itself, let alone making improvements beyond such standards. In order to make improvements beyond these very high standards it is necessary to constantly intensify the scientific research and to implement the experience gained through research in order to devise effective methods of training weightlifters, beginning with the very first lesson in the sport. Research indicates that it is undesirable to employ monotonous exercises in training, just as it would be the case with repetitious weight loads! <sup>5</sup> With the constant application of the same exercises and movements the organism ceases to respond to the stimulus but rather it adapts with a more effective reaction after a definite period of time and research shows as well that the more uniform and monotonous the loading, the faster the organism grows accustomed to it and the development of the athlete’s motor potential is by far less effective. Variation of exercise is what keeps the body guessing and recalculating its movements patterns. By using a variety of exercises resolutely in training, the potential for errors will be minimized as the brain learns to calculate subconsciously how to achieve a given movement!

When aiming for this variety in training and changing or adapting exercises to the needs of the athlete, one has to keep in mind that the aim is something that will mimic the movement pattern but with slight differences either by varying the apparatus (kettlebells, drums, sandbags, thick bar etc...), amplitude and elevation (shortening or enlarging the exercises ROM), tempo or load. These elements will be the easiest to alter in order to account for the huge variety needed for movements in training which are weightlifting specific, in order to force adaption to various muscular/neurological connections. In regards to this, the skills we force the athletes to pick up are often clearly related to weightlifting but on the other hand they can often seem very unrelated to it as well. The beginners, of young age or late newcomers, will undoubtedly register all the advantages gained by cycling different movements with different apparatuses and therefore creating better neural connections and to a certain extent, some transferable functionality will be created caused by this use of greater variation of exercises in the phase of general physical preparation (GPP).

The long term progress stems from the CNS learning all the different movements and this results in a broader skill set, higher CNS motor learning, more coordination and the ability to pick up those neural pathways again when necessary. Especially with the late newcomers in the sport of weightlifting, who tend to have different deficits and mobility issues, it is absolutely important to have the possibility to choose from a large variety of exercises in order to slowly introduce athletes to the use of a full ROM when executing the demands of a highly technical sports such a olympic weightlifting. The athlete's adaption to training loads is manifested first of all in the enhanced functional potential of the organism. It is this adaptation as manifested by its response to repeated irritation, which plays a huge role in the development of motor qualities. It enhances the athlete's ability to pick up new movement skills more effectively and to implement them during the progression of their career, regardless of their level, age and genetics. There is also considerable research in the scientific and methodological literature, connected with planning the training loading, substantiation of various training methods and the biological specifics of the athletes abilities of adapting to a certain loading. For instance one of the typical biological peculiarities of training affecting the body is that the athlete quickly adapts to it when a certain loading is employed for a prolonged period of time. It is common knowledge that all living things accommodate to external and internal irritants in their development such that the organism will be adapting to the varying conditions of its environment and by using only a limited number of exercises it will produce good results during the first 1-1.5 months only.<sup>7</sup> In various research by the Russians it has been proved that a prolonged use of only a limited number of exercises yielded a lower training effect, relative to the improvements of results due to the adaptation of the neuromuscular system to the training loading.

Y.V. Verkhoshansky's research shows that in training, effect comes about as a result of repeated and systematic repetition of a complex set of exercises. This cannot be achieved simply by raising the volume in training as the sole means of raising the effectiveness of the athlete's development and preparation. According to Verkhoshansky, raising the effectiveness of strength training depends on the following factors listed in order of their importance:<sup>7</sup>

- *REGIME*
- *MEANS*
- *METHODS*
- *SYSTEM*
- *VOLUME*

In this context and regardless of the individual phase of training (GPP, GSP or SPP), any of the loading parameters will be fully realized when the possibilities of the preceding parameters have been exhausted. The more varied the skill sets will be, when building a foundation with beginners, it is sufficient to provide different stimulus in the form of a variety of exercises to an individual in the development phase.<sup>2</sup>

Considering the more advanced athletes, linked to the multilateralism in the highly specialized sector, requires a vision of the more detailed and more targeted training strategies in the phase of specific physical preparedness (SPP) as well.<sup>3</sup>

The analysis of the scientific literature and our own research on a daily basis with the more advanced athletes allows us to conclude, that for the purpose of further improving the educational training process it is necessary to cover technical development on a broader and more versatile use of exercises as well, just as it is the case with the beginner athlete. This will aid in the development of the following methodic: <sup>7</sup>

- to strengthen the motor habits involved in lifting weight to the full capacity of the athlete or close to full capacity, while taking into account the objective physical potential of the athlete
- to determine the objective physical potential of the athlete in special preparation (GSP, SPP)
- to overcome negative psychological factors such as the so called “fear of weight”, which occurs frequently when lifting limit or near limit weights
- to determine precisely the insufficient muscular force of a missed lift in any phase of the exercise
- to avoid injury by cycling different movements
- to avoid neural fatigue

We have undertaken also the task of creating or altering exercises specifically, so that they will facilitate and accelerate the advanced athletes adaptation to training with limit and near limit weights, especially in the classic exercises. Our preliminary research showed that many athletes cannot always realize their physical potential in executing these exercises, especially in competition, because of uncertainty in their strength and/or technical errors.

According to our experience and the above mentioned initial situation, modern training of weightlifters with a more holistic scientific approach is unthinkable without the use of a variety of exercises nowadays that will cover for the technical development. Especially over the past decade, it has significantly enhanced the effectiveness of the training process. It is imperative that we further implement variety when planning exercises into weightlifting training. However, standard methods which have been employed for many years without alteration, are still used in weightlifting training halls around the globe. Unfortunately there is no book of scientific literature in the world that delivers a blue print to satisfy the requests of the multilateral aspects in the highly specialized training that is considering all the possible combinations and variables as this would be more or less endless. Improving the performances of top athletes is always a very complex task to fulfill and finding new training stimuli in a category which is already finely tuned requires research, analysis and knowledge of strategies, as well as trainers/programmers with plenty of practical experience and an open mind to evolve. There is not one day in training where a coach will not learn something new about his athletes, especially in weightlifting one never stops learning. Even when we think we have finally reached perfection, there will always be something new to mix in with the old. Therefore it is essential to be aware that the problem can be solved by finding new solutions and that trainers must find these solutions in the best way possible by means of research, application, experimentation, analysis and practical experience. <sup>3</sup>

We have implemented a versatile variety of exercises to achieve the aforementioned goal of improving the methods of educating the special physical qualities as well as the precise habit in technique training for athletes of all levels, by massively enlarging the original “Trainingsmittelkatalog” of the BVDG in an ongoing process into a compendium of our own experience and knowledge. The beginner, young athlete or a older beginner, the mediocre and the highly advanced athletes will undoubtedly register all the advantages caused by the use of greater variation of exercises in the phase of GPP.

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## What are hybrid exercises?

There are innumerable methods of introducing variety into even the simplest exercises. One form not commonly used is the hybrid exercise, so called because it combines two or more separate movements with a single weight or item of apparatus in one exercise complex. Hybrid exercise systems are far more familiar in weightlifting, yet they have been forgotten to be used in the western world. Hybrid exercises involve several joints of the body moving through a greater range of motion than is normal with single exercises. Thus instead of carrying out several separate exercises one after the other in a circuit, they can all be done in the one ongoing repetition. <sup>2</sup>

There are generally 2 different methods of applying combined exercises into the training. There is a simple combination of single exercises (single hybrids - any exercise listed in Chapter K7) and there are exercise complexes (hybrid set - any exercise listed in Chapter K8).

Focusing on the exercises listed in K8, the hybrid system refers not only to a single *hybrid repetition*, consisting of several different movements, but also the *hybrid set*, which comprises a different movement for each separate repetition of the set. Each repetition of this type of exercises comprises a different movement, regardless of the number of repetitions in each movement.

The exercises designed as a hybrid set can be used not only as a general warm-up in the first part of a workout using lighter weights and only two-three sets, but as well as a complete part of a workout with a specific purpose with a higher number of repetitions.

According scientific research and conclusions after implementing different variations and methods of teaching techniques in training, the Russians believe in teaching the snatch before the clean and jerk. The timing is far more delicate, the movement demands a higher neural learning and already contains movements needed for the clean and jerk in a more difficult starting position. Learning the clean and jerk first might even inhibit learning of the snatch at some point and in addition it's proven that faster movements place less of strain on the body if applied correctly, than do slower movements. The basic idea of teaching parts of the lift instead of the entire lift at once is based on the motor learning theory that states that learning parts is easier for the mind to handle than attempting to learn all aspects of a movement at once. As one or more segments are learned it will be easier either to add another stage or sequence or to add the separate parts together. <sup>8</sup>

This Russian approach is essentially a modified version of the so called "backward chaining" method of motor skill development, learning the last sequence in a movement and then adding each previous segment, connecting segment by segment. The Germans are using this system as well, calling this learning experience "methodical order" but not in a hybrid fashion.

This is exactly where the hybrid exercises can be of benefit in the GPP, teaching technique and provide the build up of segment by segment with repetitions according to the athletes compatibility. Their application can be very versatile, to stimulate the muscular growth or endurance in the general physical preparation (GPP) or to "shock" an athlete's musculature after a hard computational season in order to prepare for a detraining or a new mesocycle, to build up a specific endurance and cardio-vascular capacity, a specific muscle tone, a good muscular coordination and a perfectly balanced, well-developed, harmonious musculature.

In the last stages of preparation for competition it is possible that due to the higher neural output demanded by the hybrid exercises, the weights have to be of a somewhat lighter range again (55-85%) due to the higher intensity of those exercises it can increase the chance of overtraining in the stage of SPP. Due to the variety of movements within the hybrid set, there is also the possibility to involve a high-rep / low load type of work in order to enhance the muscle's ability to perform a greater number of submaximal repetitions without fatigue which also helps avoid injury, or a low rep / high load type of work to simply enhance the athletes muscular strength.

More benefits of the hybrid set are as follows and listed below:

- Exercise of a greater variety of muscle groups in a shorter time
- Dynamic exercises over a greater range of joint movement (ROM)
- Prevention of overloading ( to a single muscle group)
- Stimulates balance
- Develops muscular power, cardiovascular and muscular endurance, flexibility and strength
- Combination of strength, speed and suppleness Training ( assistance exercises)
- Avoidance of mental and physical stagnation
- Avoidance of establishing rigid or detrimental patterns of inappropriately simulated movements
- Increased blood flow to all the muscles which control particular joint movement
- Learning a complicated maneuver via breakdown into vital phases
- Stimulation of a new growth or performance phase
- Does not require a large practice area
- Could be performed simultaneously and very efficiently with a large group of athletes

There is an endless variety of hybrid sets or movements which can be devised by the inventive coach to assist the trainee, provided the below listed proper guidelines are followed to avoid injury and the acquisition of unnecessary or technically detrimental movements. <sup>2</sup>

- Perfect Body Posture
- Full Range of Motion
- Perfect Technique of Execution
- Stable Rhythm of Execution (and not too fast)
- Not changing the order of the exercises
- Respect the Rules of Periodization

Should the load be too great to permit a strict movement, a carefully executed “cheating” movement may be used to progress through any sticking point. In this respect, the order of movements in a hybrid set should be arranged to permit their safe and controlled execution without exhaustion and impaired technical execution. It is of the utmost importance to always choose the weight to accommodate for the most difficult exercise in the cycle! The weight must be chosen which will not impose excessive strain on the muscles involved in the weakest movement in each sequence. The main point that you have to pay attention to is the choice of exercises so that one part of the body is not underloaded or overloaded by the selection of the individual components of the hybrid exercise. <sup>2</sup>

The hybrid set should be performed in a non-stop and continuous order by the given repetitions for each of the movements in the chronological order, working out different segments of the body. If a remarkable cardio-vascular stimulation out of the hybrid set is needed, the number of repetition for each exercise could be gradually increased. <sup>6</sup> For example: first just the third cycle from three to four reps, then the third and second cycles from three to four reps, and finally all three cycles' repetitions to be increased up to four. Never hurry in increasing the number of repetitions, and always keep in mind the perfect execution.

We can assemble a small group of hybrid exercises on the lifting platform, in a circuit or even in a more aerobic type of session that will achieve in a short time what takes twice as long to achieve in a typical extended continuous circuit. The athletes must accommodate with a program. The accommodation means the organism's physical, psychological and functional systems' capability of adopting a higher standard of physical and mental requirements in order to be able to achieve higher performance levels. The training frequency depends on the athlete's age, technical knowledge, training level and preparation phases (GPP, GSP, SPP). The result of the training load is the accommodation to the given programs. The desired performance shows up if the training stimulus achieves the necessary intensity and magnitude.

All types of training hybrids may be used advantageously by the competitive lifter, provided they are integrated into a program carefully calculated to meet the appropriate strength, speed, skill and other special needs of the athlete. The experienced coach should be encouraged to explore and experiment with the different types of training hybrids but never subjecting the athlete to undue risk. These exercise cycles are unlimited in their variation and with some imagination and knowledge every coach will be able to compose highly efficient hybrids. The results could easily be a significant improvement in performance of the athletes by stimulating their whole physiological system in the stages of GPP.

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