PERIODIZATION AND STRENGTH TRAINING CYCLES

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Abstract

The term periodization refers to the systematic manipulation of the acute variables of training over a period that may range from days to a year. The basis of periodization is the general adaptation syndrome (GAS). The three periodization schemes most commonly used by strength coaches, which are the three most extensively researched, are classic strength and power periodization, reverse linear periodization and undulating periodization. The most common cycle uses a gradual increase in the amount of weight used over the time. Usually this starts out as low as 50% of the lifter’s 1 repetition maximum (1RM) and progresses up to 100% of the 1RM weight for that lift over a 6–12 week period. The periodization is necessary method for making continual progress. The training cycles by itself are capable of keeping the muscles adapting and prevent them from their development stagnation.

Keywords: classic periodization, reverse linear periodization, undulating periodization, strength training cycles

INTRODUCTION

The term periodization refers to the systematic manipulation of the acute variables of training over a period that may range from days to a year. The original concept was developed in the former Eastern Bloc countries in the late 1950s to optimize athletes’ adaptations to endurance training. More important, periodization revolves around the athlete’s competitive calendar so that he or she is at a competitive top fit for a competition. The basis of periodization is general adaptation syndrome (GAS), which describes three stages that an organism - such as an athlete - goes through when exposed to a stress (Selye 1936). When a body endure a new stress (for example, heavy training in the range of 3–5 reps), the muscles first goes through an alarm reaction. During this stage the athlete momentarily gets weaker. But, with continued exposure to the stress (successive workouts), the body enters the stage of adaptation. In this stage the body supercompensates the stress - such as increasing the muscle strength - toward better dealing with the stress. If the body is continually exposed to the same stress for too long, it may enter the stage of exhaustion, where its adaptation degree to the stress may actually decline.

This could mean that the strength, the athlete gained during the adaptation stage, will cease, and stagnation may occur. It may even lead to an actual decline in strength. Although, this theory could now be considered as a simple body’s response to a stress, it could explain the reasons of which the periodization is so important for the proper adaptation toward the strength within the training. The muscle most is exposed to one of the training styles for just long enough to ensure positive changes and to avoid a sudden changes as a results of those positive adaptations. At this stage a new training style should be introduced, and the cycle continues.

A simplistic take on periodization is the maxim of “everything works, but nothing works forever”. Having a large arsenal of training methods to use for short periods and continually cycling them in a systematic order will prevent stagnation and maximize adaptations during the training.

The three periodization schemes, most commonly used by strength coaches, which are the three most extensively researched, are classic strength and power periodization, reverse linear periodization and undulating periodization. Although there are many other, more obscure periodization schemes, a discussion including these three will cover the premise behind the periodization. Regarding the concrete plan, periodized strength training programs have been shown through many researches that they are significantly more effective than nonperiodized programs toward increasing of the strength, power and athletic performance in both men and women (Kraemer et al. 2003.; Marx et al. 2001.; Rhea & Alderman 2004.; Willoughby 1993.).

Classic periodization

The name implies that this system is the hallmark periodization scheme most associated with the term periodization. In its most general form, classic periodization divides a long-term training period called the macrocycle (which typically involves 6 months to 1 year, but could be of up to 4 years, such as with the Olympic
athletes) into smaller phases called mesocycles (usually lasting several weeks to a few months), which are also subdivided into weekly microcycles. The strength training progresses over the macrocycle from low resistance (intensity) to a high intensity with total volume following the opposite progression, from high to low.

The next mesocycle is usually the strength phase. As the name implies, the major goal during this phase is to maximize the muscle strength. This phase is typically moderate to high within the intensity with a span within the range of 2–6 and the goal to build up the muscle strength. The span is increasing of 3 or 4 sets performed per exercise and while decreasing of the total exercises per a muscle group toward the phase which leads to the hypertrophy phase. After the strength phase, the following one is the power phase. The intensity is high leveled (reps are in the range of 2–3), similar to the previous phase. The volume is a bit lower; sets usually are about 3 per exercise. The point of this phase is to start transferring the strength gains made during the first two phases into more explosive power which is very useful for competition stage. The final two mesocycles prepare the athlete for a competition. The peak phase follows the power phase. It is categorized by a low volume (only 1–3 sets per exercise are formed) and with very high intensity (reps as low as 1 per set). This phase gets the athlete prepared for a competition by maximizing strength and the power. After this phase, athlete’s training strength drops down and undergoes a period of active rest just before the competition. The active rest phase is categorized by activity other than a strength training, such as swimming, hiking or sport activities like tennis. This phase usually lasts for only about 1–2 weeks before a competition to allow the body to recover from all the strenuous training so that it can perform at its best. After a competition, this phase may actually continue for several weeks before the periodized training scheme starts again. For this reason, the active rest phase is often referred to as a transition phase.

Most of the strength experts are using the classic strength and power periodization program which will follow the mesocycle phases for anywhere from 3 weeks to a 3 months. Although, the classic strength periodization schemes can enable adaptations within the strength training, some issues need to be considered with these models. The first consideration is the fact that the higher-volume training phase may lead to a fatigue which follows consecutively and lasts for a too long. This could be a problem for athletes who must compete at various times throughout the year.

The second consideration is the fact that the muscle hypertrophy gained during the hypertrophy phase may not be maintained very well during the later stages, where the volume gets considerably low. This could be a problem for bodybuilders and other athletes who are concerned about the muscle mass within the whole body.

**Reverse linear periodization**

Reverse linear periodization takes the classic strength and power periodization scheme and runs it backward. Whereas the goal of the classic periodization model is to maximize an athlete’s strength and power, the goal of the reverse linear model is to maximize muscle hypertrophy or endurance strength, depending on the rep range that the program concludes with (8–12 for hypertrophy and 20–30 for the strength endurance). The research supports the concept of the reverse linear periodization scheme is more effective for increasing the endurance strength than the classic model (Rhea et al. 2003). In fact, the reverse linear model starts with the power phase, where intensity is very high (2 or 3 reps per set) and volume is low (3 sets per exercise). The peaking phase is usually skipped because the athlete is not preparing for a competition in which power and strength is of importance. After the athlete follows the power phase for a several weeks, the strength phase starts. Again, the strength phase uses moderate to high intensity (2–6 reps per set) at a slightly higher volume than the power phase (3 or 4 sets per exercise).

Being able to lift heavier weight for the desired number of reps during the hypertrophy phase can result in significant gains in muscle mass as well as muscle endurance. The hypertrophy stage comes last in the program and involves lower intensity (8–12 reps per set) and high volume, which is the best prescription for building the muscle mass. This stage is good systematic approach for gaining the muscle mass, which makes it a smart periodized plan for bodybuilders. To make the reverse linear model a better fit for optimizing endurance strength, the power phase can be eliminated.

That means it could start with the strength phase, then move toward the hypertrophy phase, then move to the endurance phase (where the reps are in the range of 20–30), and finally move to an active rest phase if the athlete is training for a competition. As with any periodization scheme, the acute variables can be manipulated within each stage toward improving the results of the program. For instance, a reverse linear model can start with reps in the 8–10 range, then to progress toward the range of 12–15, and to end up with the range of 20–30.

**Undulating periodization**

As the name implies, undulating periodization follows a less linear scheme than does the classic strength (power) scheme or the reverse linear periodization scheme. Undulating models are gaining in popularity in strength rooms because of their convenience and effectiveness. Undulating periodization schemes typically follow a 14-day mesocycle with three or four different workouts toward a staggering phase. This way, the athlete can change the intensity and volume from one workout to another.

After the 2-week mesocycle the athlete could switch back to a different workout and perform the me-
s-cycle over again, or the athlete can take a week off (especially if a competition is scheduled) and then return to the 14-day mesocycle. One of the important things about undulating periodization is that it requires less organization and planning than the linear periodized programs. For instance, if a person felt tired or sick (or conversely, the person felt exceptionally motivated and strong one day), the workout could be changed for that day to better suit the mood and physical health condition. Although it seems that such a training system that requires little planning, would be less effective than a program that is scheduled months in advance, research has found that undulating periodized programs are just as effective as linear periodized models for the development of strength power and muscle mass (Marx et al. 2001; Kraemer et al. 2000) and are more effective than nonperiodized programs. One study by Rhea et al. (2002) found that undulating periodized training was more effective for developing strength compared to a linear periodized plan.

In fact, the sporadic nature of the undulating program works as a default for building muscle, strength and the power. That’s because the periodization is based on the fact that a physiological system makes adaptations to a stress that it is exposed to. Yet, if the system is exposed to the stress for too long, the adaptations will plateau and even reverse to some degree. In this model, the different types of strength training (heavy, light, fast or whatever) are cycled repeatedly from day to day.

Types of training cycles

**Periodization** is a term used by strength coaches, experts, and athletes who have been educated on the field of training. Rarely, when the term will be used in the gym by bodybuilders or powerlifters, that will refer to the concept of periodization as cycling. Powerlifters use several types of cycles to prepare for a competition. The most common cycle uses a gradual increase in the amount of weight used over the time. Usually this starts out as low as 50% of the lifter’s 1 repetition maximum (1RM) and progresses up to 100% of the 1RM weight for that lift over a 6–12 week period. Bodybuilders also use numerous cycling strategies. In fact, an unlimited number of bodybuilding cycles could be used. The most common ones used are similar to the reverse linear periodization scheme and the undulating periodization scheme. Although these athletes mix up their training frequently, the focus tends to stay on reps in the moderate to high range (8–20). Occasionally, these athletes train with heavy weight and low reps, but these phases are short and infrequent.

**Conclusion**

Regardless of whether the goal is to increase power and strength or muscle growth, periodization is a necessary method for making continual progress. Only by cycling the training phases it is possible keep the muscles adapting and prevent them from stagnating. Fortunately, numerous periodization methods can be employed. These include the classic linear periodized schemes, reverse linear schemes and undulating schemes. Over the time it should be tried them all by the athletes and they should make their decision what scheme works best for them.

**REFERENCES**


ПОИМ НА ПЕРИОДИЗАЦИЈАТА И ЦИКЛУСИТЕ
ВО ТРЕНИНГОТ НА СНАГАТА

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Апстракт
Терминот периодизација укажува на систематската употреба на актуелните варијабли на тренингот во текот на периодот кој може да трае од неколку денови до неколку го дини. Основата на периодизацијата се состои во Генералниот Адаптацион Синдром (ГАС). Постојат три системи за периодизација кои кондициони тренерите и користат. Тие системи се најмогу истражувани и класификувани како класична периодизација на снагата и силата, повратна линеарна периодизација и таласеста периодизација. Најчест тип на периодизацијата на циклусите е овој во кој се користи постепено зголемување на тежината во текот на времето. Вообичаено е да се почиње со тежина која изнесува 50% од 1RM која се зголемува до 100% од 1RM во текот од 6-12 недели. Периодизацијата на циклусите е метода за непрекинато напредување во процесот на тренингот. Циклусите на тренингот можат да обезбедат мускулна адаптација на тренажните оптоварувања.

Ключни зборови: класична периодизација, повратна линеарна периодизација, таласеста периодизација

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