



TRAINING PERIODIZATION

For the Olympic Weightlifter



CANADIAN WEIGHTLIFTING FEDERATION HALTÉROPHILE CANADIENNE



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Training Periodization is the process of structuring a program into various training periods with well-defined training parameters. During different times of the year, training workouts vary in the length or the number of repetitions in a training session and the percentage of one's maximum capacity. In Olympic weightlifting, many ideas on periodization were derived from Russia's strength training guru's models; they were characterized by low-intensity and high volume periods of general preparatory training that would gradually shift towards high-intensity and low volume work for a more sport specific nature. With such plans, the athlete is expected to handle ever-increasing loads as the season progresses, resulting in improved performance.

While this basic approach is sound and will likely result in training gains, we need to realize that the degree of gain won't be the same for every athlete. This model is limited when it comes to meeting the demands of athletes with various degrees of experience. Also, a critical consideration is that an athlete must spend a significant amount of time perfecting the specific motor skills necessary to achieve and to maintain technical mastery of the competitive movements, the **Snatch** and the **Clean & Jerk**. If we employ an extended period of time devoted to general and not sport-specific training, this will take away from the available time and physical resources necessary to maintain the sport-specific skills.

Thus, the true purpose of Training Periodization is to cause the muscles to continually adapt to new conditions of overload, allow the muscles to recover from the stress of training, and to advance the sport-specific skills. This approach will call for a division of training into periods, which strictly identify training goals and objectives. The coach as well as the athlete must carefully record the number of training units, the intensity, the number of repetitions, and even the rest intervals, so that the training goals and objectives can be met.

To illustrate the advanced meaning of Training Periodization, a structure of Annual Training for three different athletes based on their developmental stage will be presented.

1. **L2T** – Learn to Train
2. **T2T** – Train to Train **T2C** – Train to Compete
3. **L2W** – Learn to Win **T2W** – Train to Win

Annual Training Periodization for a L2T (Beginner) Athlete

Objectives to be accomplished during the first year of training:

1. Overall Physical Development: Aerobic and anaerobic systems, strength, power speed, agility, flexibility, muscular coordination
2. Technical Preparation: Teaching process from simple to more complex exercises, reinforcing technique
3. Psychological Preparation: Motivation, discipline and proper conduct, fair play, concentration, relaxation
4. Tactical Preparation: Proper warm-up before test or competition, execution of the predetermined attempts
5. Competition Objective: Continuous improvement of the results

For a L2T athlete, four periods of training are distinguished. Each period lasts about three months each. The increase in training effort shows a continuous step-by-step growth, with an unloading phase after each period.

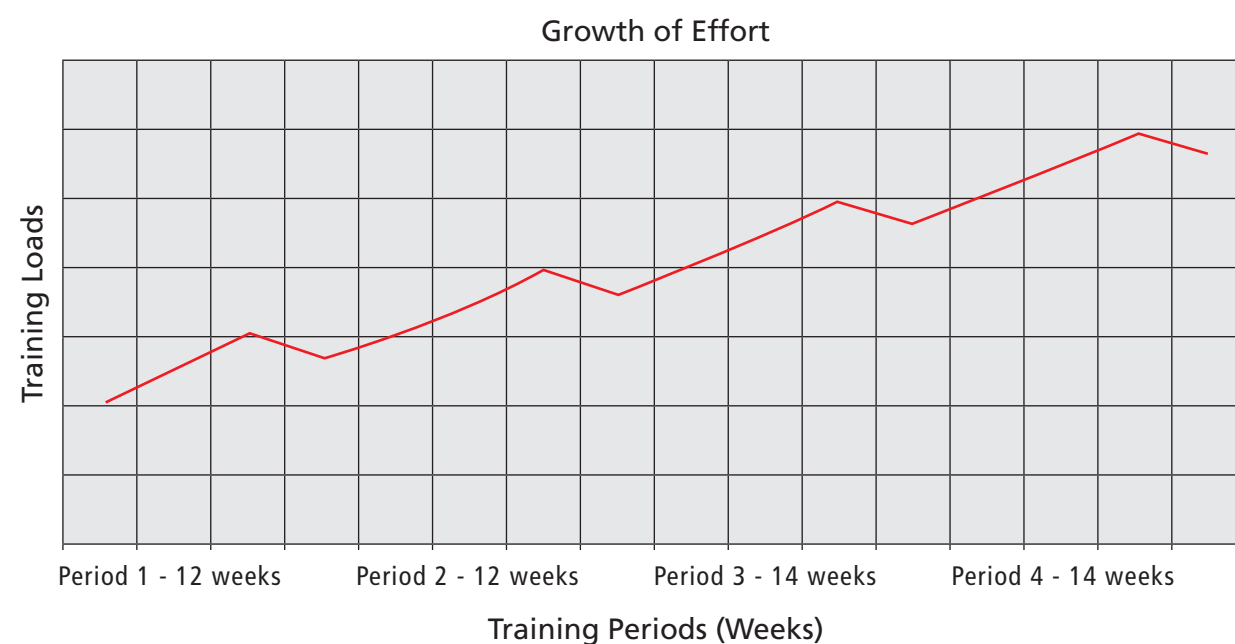


Figure 1: Growth of Effort for the L2T Athlete

Note: In weightlifting, the training load is defined as a combination of volume and intensity. The number of repetitions represents the volume of training. The amount of weight lifted in proportion to a person's 1-repetition maximum (1 RM), the speed of performance, and the technical difficulty of the exercise contribute to the intensity.

The Weekly Training Cycle – enables the coach to evaluate athlete effort on the basis of the number of practice sessions, training hours, number of exercises, and the number of sets and repetitions performed.

The frequency and duration of training has a significant influence on the development of muscle strength and sport skills. As the performance in weightlifting increases there is a tendency to increase the total number of training days and their duration. This is done according to the principle of overloading, which is one of the most important principles in weightlifting training. In the L2T periodization training model the following variants in regard to frequency and number of training hours/duration is suggested:



Photo: S. Cleary

Period 1: 3 practice sessions - volume low, intensity low

Days	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Total
Practice	1 hour		1 hour		1 hour			3 hours

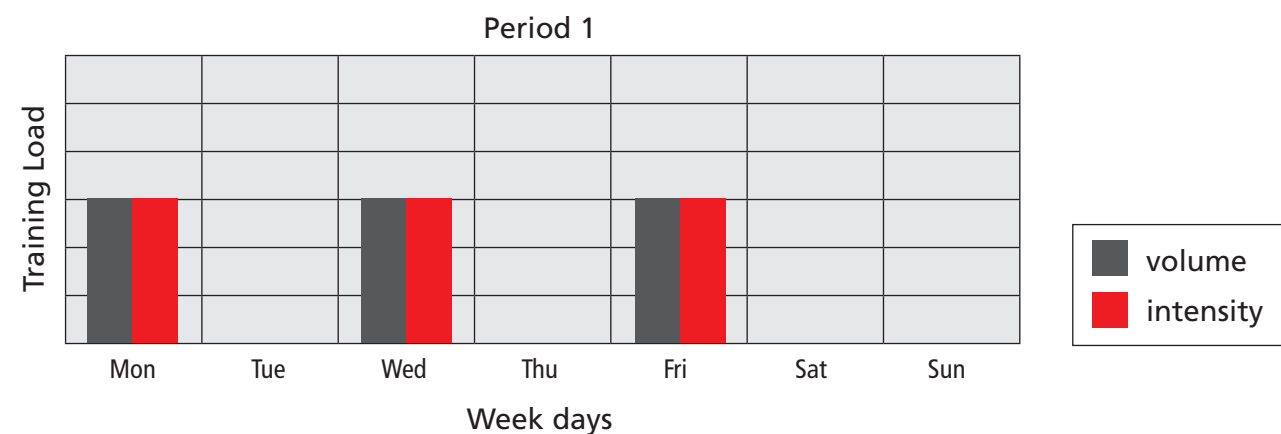


Figure 2: Weekly Training Load during the L2T training: Period 1

Period 2: 3 practice sessions - slight increase in volume, intensity low

Days	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Total
Practice	1.5 hours		1.5 hours		1.5 hours			4.5 hours

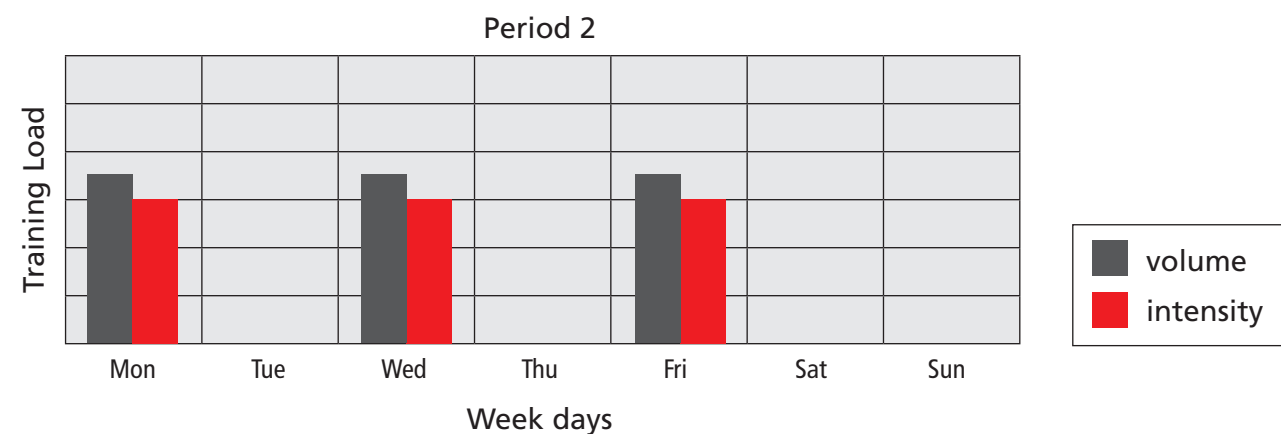


Figure 3: Weekly Training Load during the L2T training: Period 2

Period 3: 4 practice sessions - further increase in volume by adding an additional practice session, intensity low to medium

Days	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Total
Practice	1.5 hours		1.25 hours		1.5 hours	1 hour		5.25 hours

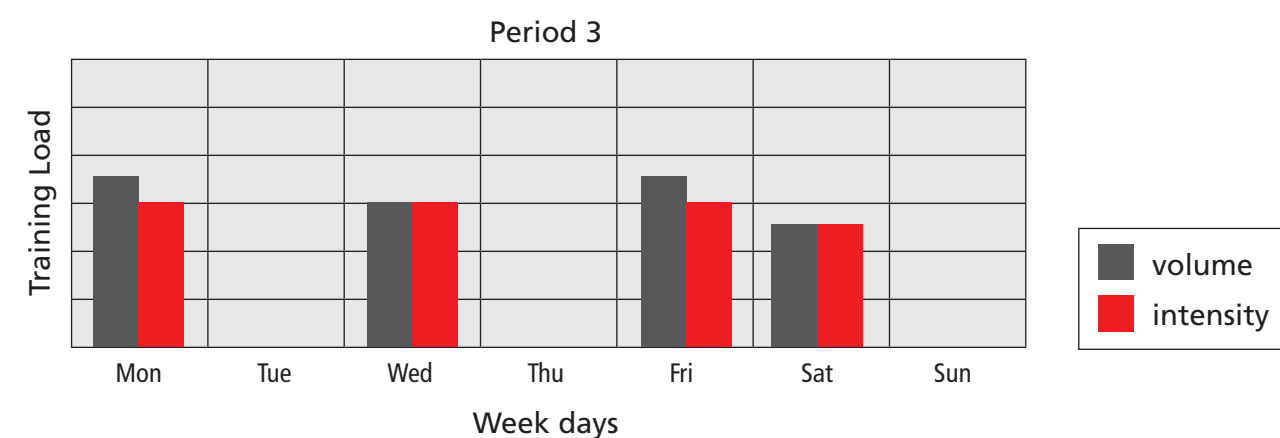


Figure 4: Weekly Training Load during the L2T training: Period 3

Period 4: 4 practice sessions - increase in volume by creating one workout with high volume, intensity low to medium

Days	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Total
Practice	2 hours		1.5 hours		1.5 hours	1 hour		6 hours

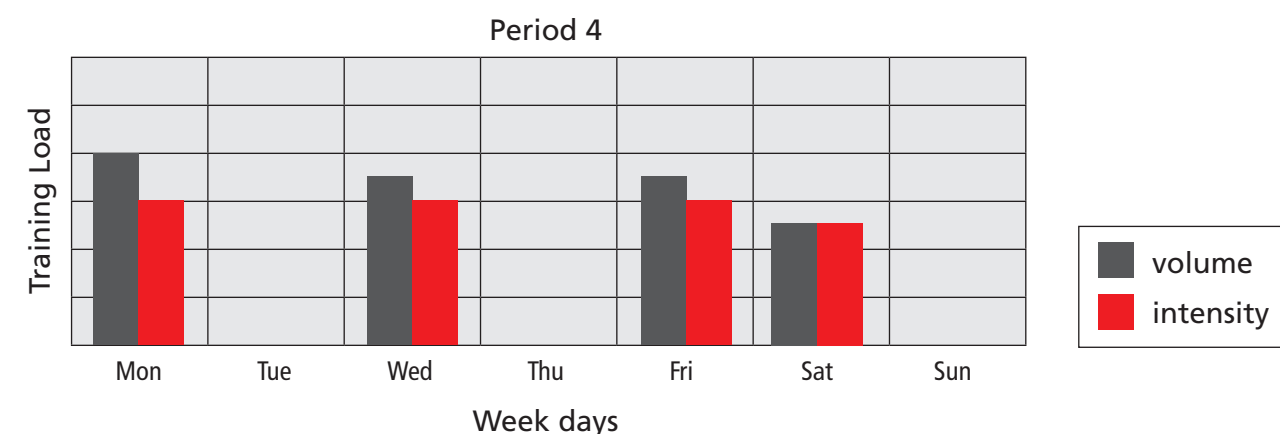


Figure 5: Weekly Training Load during the L2T training: Period 4

“The weekly training cycle represents the basic core of weightlifting training.”

The Training Session should consist of:

- Coaches Instructions:** pre-training talk where the coach describes the task of today’s session and any other necessary instructions.
- Warm-up:** preparation of the body for higher intensity effort. This step includes general body warm-up consisting of exercises such as jogging, cycling, stepper, and the specific warm-up including stretching, wooden stick, and imitation of the lifts to be performed during the session.
- Fundamental Part:** contains the weight training exercises specific to the sport.
- Cool down:** is required to allow the body to readjust to the removal of physical demand.

Example of the Training Session

Place: club name		Time: 4:00 pm
Task: improvement of the split jerk technique and leg strength development		
Training Phase	Exercises	Duration
Coaching Instructions	Explain the session’s task	5 min
Warm-up	Jogging, stretching, jumps	10 min
Fundamental Phase	Split jerk 2 sets x 5 repetitions x 50% 2 sets x 4 repetitions x 60% 2 sets x 3 repetitions x 70%	50 min
	Back squats 2 sets x 6 repetitions x 60% 2 sets x 5 repetitions x 70% 2 sets x 4 repetitions x 80%	
	Military press 5 sets x 5 repetitions x 60%	
Cool Down	Abdominal exercises 3 sets x 20 repetitions	15 min
	Relaxation stretching	
		Total time: 80 min



Photo: S. Cleary



Photo: B. Acres



Photo: R. Macklem

Annual Training Periodization for a T2T/T2C (Intermediate) Athlete

Following the initial stage of training, which in this model would take approximately 1-3 years, the athlete possesses correct basic technique, is generally physically fit, practices regularly three to four times per week and participates in club or provincial competitions. The athlete is ready to enter more advanced training.

Objectives to be accomplished during the intermediate stage of training:

1. Overall Physical Development: Strength of the main muscle groups, speed in conjunction with strength, specific flexibility, strength endurance, specific coordination
2. Technical Preparation: Achieve technique perfection, continuously refine the lifts focusing on the proper posture, speed of the movement, receiving position
3. Psychological Preparation: Develop narrow and intense concentration, visualization, muscular relaxation
4. Tactical Preparation: Practical application of the strictly planned attempts
5. Competition Objective: Increase sport result during the competition season, peak for main event

Having identified the main objectives, the coach needs to break the annual cycle into training periods. The athlete has been scheduled to participate in seven events during the year: Club competition in January, friendly competition in February, regional championships in March, national championships in May, inter-club competition in October, provincial championships in November, and local competition in December.

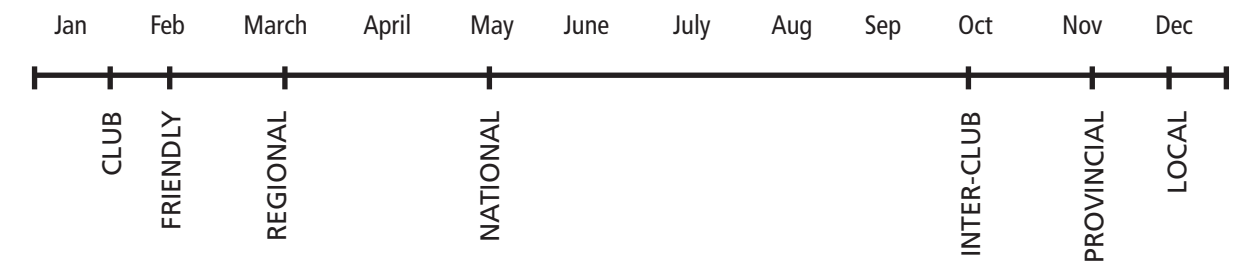


Figure 6: Annual Competition Schedule

Looking at Figure 6, the coach will distinguish two seasons: spring and fall. This is very typical to most of the Events Calendars in weightlifting based on the IWF calendar with Continental Championships and Jr. Worlds typically in late spring, and Sr. World Championships in the fall. In such situations, the coach decides to break the year into two seasons of equal duration of six months each. In the example provided for T2T/T2C periodization, the focus will be on developing the spring season. To set the goals, the coach analyzes the following available data:

1. The biggest competition is the National Championship
2. The athlete best performance is 185 kg
3. The athlete needs 190 kg to qualify for the Nationals
4. The athlete progressed 20 kg in the last season
5. Last seasons volume and intensity

Going through the analysis the coach sets the following goals:

1. Peak at the National Championships
2. Place 3-4 at the National Championships
3. Total 185 kg at the Club Competition in January
4. Total 190 kg at the Friendly Competition in February
5. Total 195 kg at the Regional Competition in March
6. Total 200 kg at the National Championships in May
7. Progress 15 kg in the total during the season

With 26 weeks of training the coach should break the season into the following periods of training:

GDP – General Development Period
PP – Preparatory Period
CC – Competition Period
TP – Transition Period

January	February	March	April	May	June
GDP	PP	CC	CC	TP	TP

Figure 7: Periods of Training

Before each session, an athlete should engage in a general warm-up to prepare the body for high intensity work. Warm-up should consist of 5-10 minutes devoted to exercises such as jogging, cycling, stepper, and 5-10 minutes to stretching and flexibility exercises.

After each session cool down exercises such as sit ups, light intensity machine exercises and stretches should be performed.

General Development Period

Following last season's Transition Period (unloading period of training), the athlete enters 3 weeks of general development training. These 3 weeks aim at the adjustment of the body to training with the higher values of loading. The main focus is on general strength development, strength endurance, flexibility, and coordination. The exercises are performed with low intensity and medium volume. A wide variety of exercises is recommended.

General Development Period			
Training Parameters	Week 1	Week 2	Week 3
# of sessions per week	4	5	4
Volume	Medium	Medium	Medium
Intensity	Low	Medium	Medium

Figure 8: Weekly training parameters during the General Development Period

Preparatory Period

During the Preparatory Period the coach should structure the training to concentrate on strength development without neglecting technical exercises. The coach gradually increases the volume of work while at the same time maintaining the average intensity at medium values. Generally speaking, the Preparatory Period is characterized by a great amount of work, with lifting of sub-maximum and maximum weights in strength or assistance exercises such as pulls, squats, or press related exercises. The coach employs control tests for power and strength exercises to monitor the progression of the athlete. Total number of weekly cycles is 9.

Preparatory Period									
Training Parameters	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
# of sessions	4 plus Comp	5	5 plus Comp	3	4 plus Comp	5	5 plus Test	5	3 plus Test
Volume	Med	High	Very High	High	Med	High	Very High	High	Med
Intensity	Med	Med	Low	Med	Low	Med	Low	Med	Med

Figure 9: Weekly training parameters during the Preparatory Period

The athlete is scheduled to participate in two competitions. In both cases, the week before the competition an unloading weekly cycle is used to prevent over-training and at the same time allow for quality performance at the competition.

Competition Period

In the Competition Period the coach places emphasis on the classical exercises: The Snatch and the Clean & Jerk. During this period the coach wants the athlete to specialize as much as possible by performing lifts closely related to the classical exercises. The training volume becomes smaller while the coach further reduces general development exercises such as Press, Good Mornings, and lifts from the blocks or hang. Pulls and Squats are still important, but their volume also declines. Intensity on the other exercises increases to high and even very high. The coach employs control tests for the Snatch and the Clean & Jerk to simulate the competition situation. The total number of weekly cycles is 9.

Competition Period									
Training Parameters	Week 13	Week 14	Week 15	Week 16	Week 17	Week 18	Week 19	Week 20	Week 21
# of sessions	5	5 Test	6	3 Comp	5	5 Test	6	5	3 Comp
Volume	Med	Med	Low	Low	High	Med	Low	Low	Low
Intensity	High	High	Very High	Low	High	High	Very High	High	Low

Figure 10: Weekly training parameters during the Competition Period.

The week before major competitions (Regional, Provincial, and National etc.) is a special training cycle. The coach should schedule a total of three practices: Monday - 90 %, Wednesday - 70 % and Friday - 50 % of the regular training load. By gradual reduction in the volume and intensity the coach allows the athlete to fully recuperate and at the same time maintain body readiness to perform maximum efforts. Complete rest is not recommended.

Transition Period

This period is where the training efforts diminish and alter, but there is no complete time off from training. Number of sessions is reduced to 3 per week with low to medium volume and intensity. Exercise selection is oriented on multi skill development: coordination, flexibility, cardio system, and speed. Number and variety of exercises increase. This kind of work allows the athlete to physically and mentally recuperate and when the next season approaches resume training at a higher skill level.

Transition Period					
Training Parameters	Week 22	Week 23	Week 24	Week 25	Week 26
# of sessions	3	3	3	3	3
Volume	Med	Med	Med	Med	Med
Intensity	Low	Low	Low	Low	Low

Figure 11: Weekly training parameters during the Transition Period.

Weekly Cycle of Training for an T2T/T2C Athlete
 In the model for a T2T/T2C periodization program the coach chooses the following variants in regard to frequency and number of training hours:

Days	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Total
Time	1.5 hours		1.5 hours		1.5 hours			4.5 hours

Figure 12: 3 training sessions per week

Days	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Total
Time	2 hours	1.5 hours	2 hours		2.5 hours			8 hours

Figure 13: 4 training sessions per week

Days	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Total
Time	2 hours	1.5 hours	2 hours		2.5 hours	1.5 hours		9.5 hours

Figure 14: 5 training sessions per week

Days	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Total
Time	2 hours	1.5 hours	2.5 hours		1 hour 2 hours	1.5 hours		10.5 hours

Figure 15: 6 training sessions per week



Photos (top): R. Macklem



Photo: S. Cleary

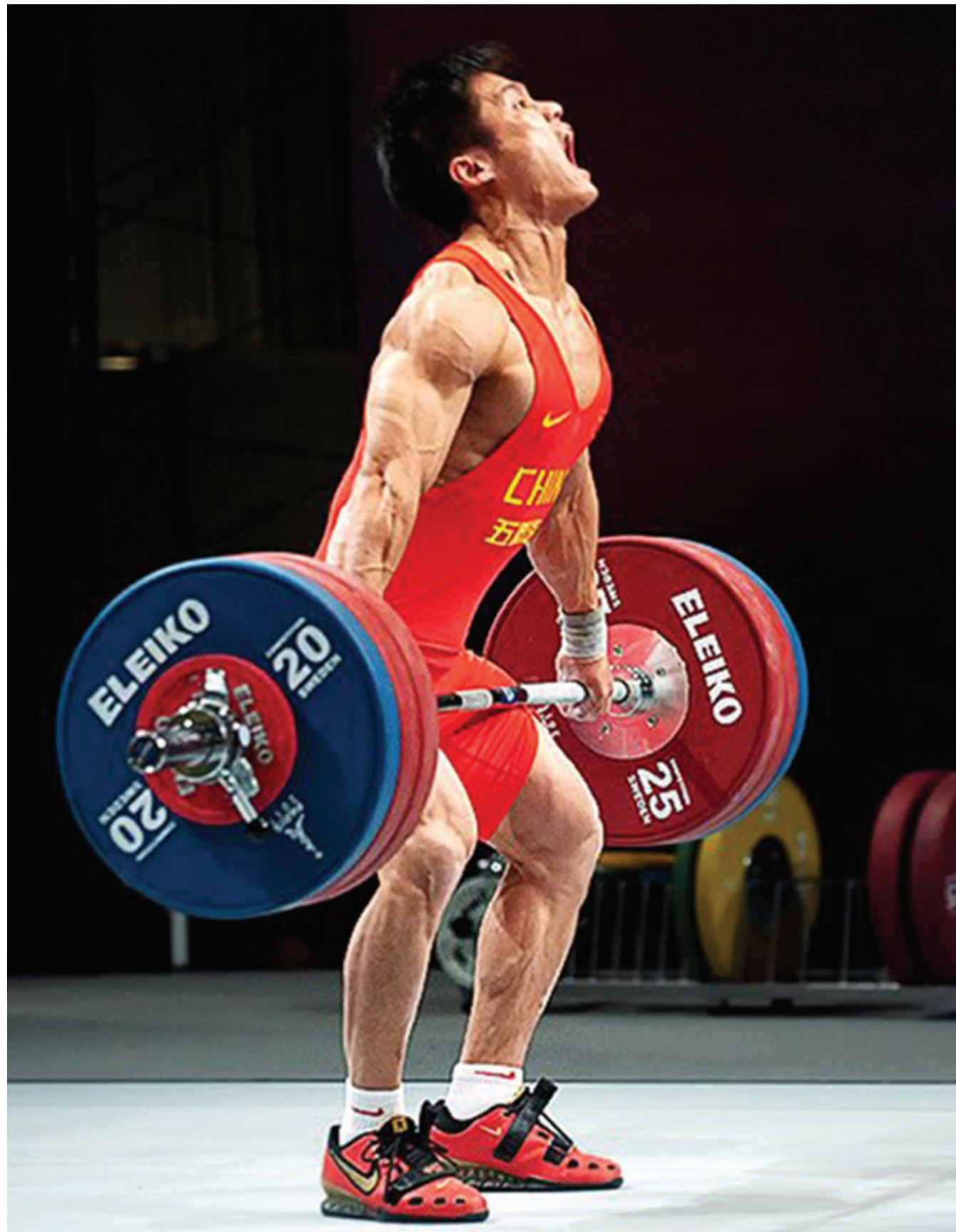


Photo: R. Macklem

Annual Training Periodization for a L2W/T2W (Advanced) Athlete

As a L2W/T2W Competitive Weightlifter, you enter the next stage of athletic development called Sport Specialization. The Sport Specialization Stage consists of the following major objectives:

1. Overall Physical Development: Maximize strength of the main muscle groups, speed in conjunction with strength, power endurance, and neuromuscular coordination
2. Technical Preparation: Develop individual style, emphasize explosive phase of the lifts
3. Psychological Preparation: Perform in a highly competitive situation under pressure
4. Tactical Preparation: Prepare to perform pre-planned strategies and attempts
5. Competition Objective: Maximize competition results, peak for main events, break competition records (Provincial, National, and International)

The L2W/T2W Competitive Program is developed in such a way as to ensure a continuous body overload, and as a result, progress in performance should be achieved. An increase in volume of training is accomplished by increasing the number of classical exercises and the modified form of these exercises such as: Snatch and Clean from the hips, hang or blocks, Jerk behind the neck, and half squat Snatch or Clean with stop at knee level. Besides the increase in volume, these exercises will ensure continuous technique refinement and improvement of the neuromuscular coordination.

Increased amount of Pulls and Squats will allow the athlete to concentrate on the development of the main muscle groups, mostly legs and lower back. Pulls are used in various forms, such as Pulls from the blocks, below the knees, with 4 stops, slow tempo Pulls, and isometric or eccentric Pulls. Squats are performed with stops, through specific range of motion i.e. Half Squats, Split Squats, slow tempo Squats, Squat jumps, isometric and eccentric Squats.

Another strategy used in the L2W/T2W Competitive Program is combining certain simplified exercises into more complex ones. Some examples of such combinations are: Front Squat + Jerk, Back Squats + Jerk behind the neck, Pull + Snatch or Clean, Split Clean + Split Jerk. Strength development and technique improvement are the expected benefits of such applications.

Power development in conjunction with strength is accomplished by incorporating Squat Jumps, Half Squat + stop + jump, Speed Power Snatch or Clean, a dynamic form of Good Mornings, and jumping exercises into the program. The above exercises are performed with relatively light weight or none at all, depending on the training method used.

The increase of training intensity throughout the program is accomplished by performing a higher number of lifts in the 80 – 100 % range of maximum performance, as well as the above mentioned increase in the amount of Pulls and Squats.

This program includes some advanced strength training methods such as isometric training, eccentric training and training to failure. Isometric contraction happens when the athlete exerts force against the barbell with no change in the length of the muscle. There is no movement in the joints during the isometric contraction.

Eccentric action is one in which an external force (the barbell) overcomes the force of the muscles and the ends of the muscle are drawn further apart. To accomplish eccentric action, an exercise must be performed with a maximum load, therefore providing a more effective exploitation of the muscle potential and encouraging further adaptation.

Training to failure involves performing a number of repetitions to maximum exertion. Loads of 60-80 % from maximum possibilities are used, with a target to perform approximately 10 to 15 repetitions. If an athlete can perform significantly more repetitions than the targeted number, an increase of percentages is warranted.

The process of analysis and goal setting for the L2W/T2W Competitive Program is similar to the L2T/T2T Program. The main difference would be in the planning of results and selection of the proper level of competition.

The length of the season and structure of basic periodization for the L2W/T2W Competitive Program also remains the same as the L2T/T2T Program. However, with an ever increasing volume and intensity, the program employs relatively short micro-cycles: 3 week loading cycles in the Preparatory Period and 2 weeks in the Competition Period. Each training cycle is followed by a short unloading phase of 3-7 days. This type of training will ensure continuous overloading, but should prevent over training.

General Development Period - L2W/T2W Program			
Training Parameters	Week 1	Week 2	Week 3
# of sessions per week	5	6	5
Volume	Medium	Medium	Medium
Intensity	Low	Medium	Medium

Figure 16: Weekly training parameters during the General Development Period – L2W/T2W Program.

Preparatory Period - Advanced Program									
Training Parameters	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
# of sessions	6	6	4	6	7	4	7	7	3
Volume	High	High	Med	High	Very High	Med	Very High	Very High	Low
Intensity	Med	Med	Low	Med	Med	Low	Med	Med	Low

Figure 17: Weekly training parameters during the Preparatory Period – L2W/T2W Program.

Competition Period - Advanced Program									
Training Parameters	Week 13	Week 14	Week 15	Week 16	Week 17	Week 18	Week 19	Week 20	Week 21
# of sessions	7	6	4	7	5	4	6	5	3
Volume	High	Med	Low	Med	Med	Med	Low	Low	Low
Intensity	High	Very High	High	Very High	High	Med	Very High	High	Low

Figure 18: Weekly training parameters during the Competition Period – L2W/T2W Program.

Transition Period					
Training Parameters	Week 22	Week 23	Week 24	Week 25	Week 26
# of sessions	3	3	3	3	3
Volume	Med	Med	Low	Med	Low
Intensity	Low	Low	Low	Low	Low

Figure 19: Weekly training parameters during the Transition Period – L2W/T2W Program.



Photo: R. Macklem



Photo: J. Lacasse



Photos: J. Lacasse

Weekly Cycle of Training for an L2W/T2W Athlete
In the L2W/T2W Competition Program a coach chooses the following variants in regard to frequency and number of training hours:

Days	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Total
Time	2 hours		2 hours		2 hours			6 hours

Figure 20: 3 training sessions per week

Days	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Total
Time	2.5 hours	1.5 hours	2.5 hours		2.5 hours			9 hours

Figure 21: 4 training sessions per week

Days	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Total
Time	2.5 hours	1.5 hours	2.5 hours		2.5 hours	1.5 hours		10.5 hours

Figure 22: 5 training sessions per week

Days	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Total
Time	2.5 hours	1.5 hours	2.5 hours		1.5 hour 2 hours	2 hours		12 hours

Figure 23: 6 training sessions per week

Days	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Total
Time	1.5 hour 2 hours	2 hours	2.5 hours		1.5 hour 2 hours	2 hours		13.5 hours

Figure 24: 7 training sessions per week

Involvement in the L2W/T2W Competitive Program requires a wide utilization of recovery and recuperation methods such as hand massage, whirlpool massage, sauna, bathing in water with mineral salt solution, and showers of varied temperatures. Proper and advanced planning of nutrition becomes a very important part of regeneration during this training period.

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ACKNOWLEDGEMENTS

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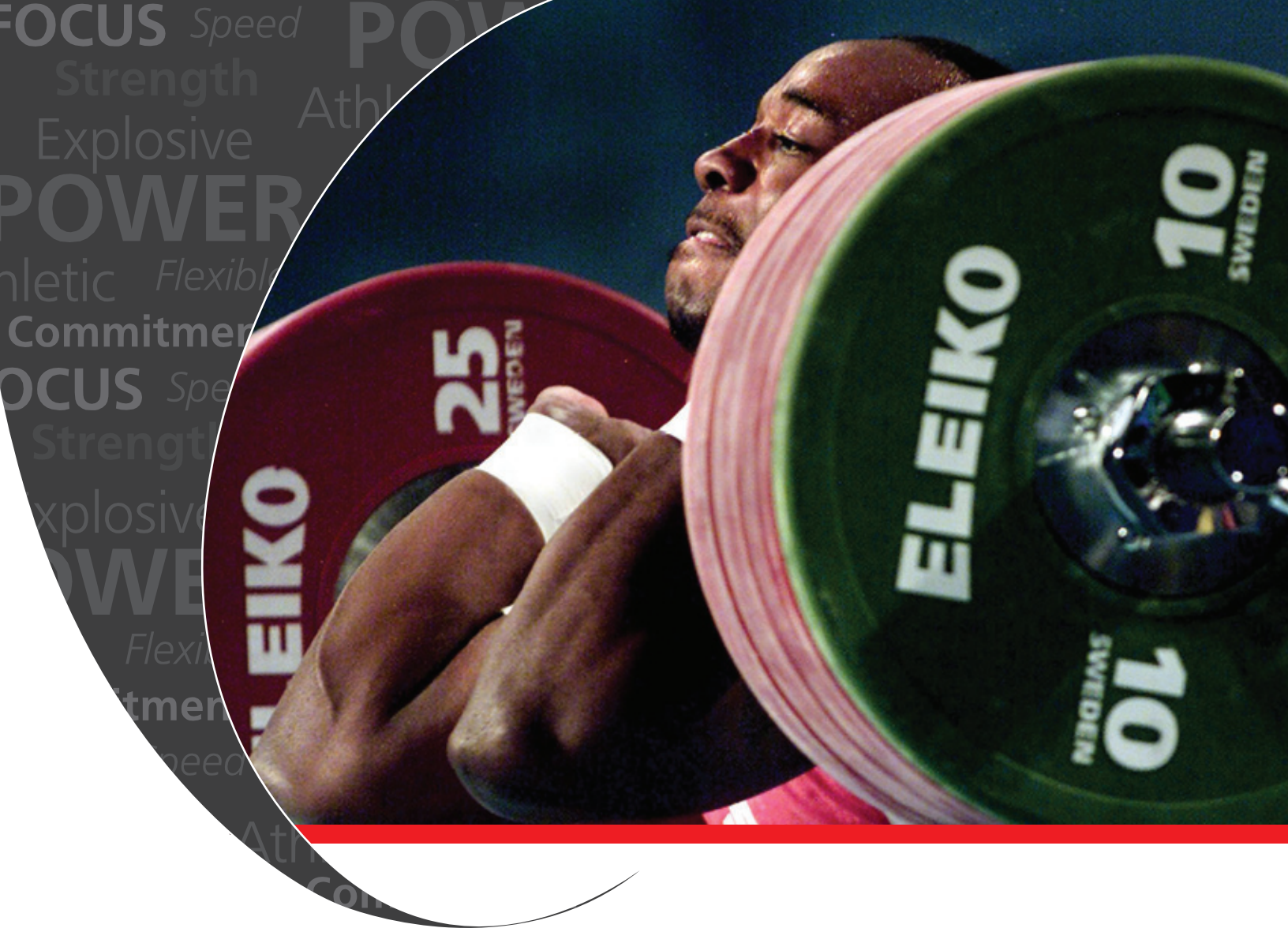
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McAllister Marketing

*We acknowledge the financial support of
The Government of Canada through Sport
Canada, a branch of the Department of
Canadian Heritage.*

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