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Designing an Annual Training and Competition Plan:

a Step by Step Approach

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Designing an Annual Training and Competition Plan: a Step by Step Approach - Overview

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Step 1: Determine the Demands of the Event

Determine the demands of the sport, discipline or event by assigning a degree of importance to the variables listed below (e.g. key performance factor, important, moderately important, low importance, not applicable). In your assessment, consider the importance of each variable for both a typical competition and the athlete's ability to sustain the training load over several weeks or months.

	KPF	IMP	MOD	LOW	N/A
1.1 Anaerobic alactic power	()	()	()	()	()
1.2 Anaerobic alactic capacity	()	()	()	()	()
1.3 Anaerobic lactic power	()	()	()	()	()
1.4 Anaerobic lactic capacity	()	()	()	()	()
1.5 Aerobic power	()	()	()	()	()
1.6 Aerobic endurance	()	()	()	()	()
1.7 Maximum strength	()	()	()	()	()
1.8 Relative strength	()	()	()	()	()
1.9 Strength endurance	()	()	()	()	()
1.10 Power	()	()	()	()	()
1.11 Speed	()	()	()	()	()
1.12 Coordination/agility	()	()	()	()	()
1.13 Flexibility	()	()	()	()	()
1.14 Artistic sense	()	()	()	()	()
1.15 Kinesthetic sense	()	()	()	()	()
1.16 Weight management	()	()	()	()	()
1.17 Technique/skills	()	()	()	()	()
(list key sport-specific elements)	()	()	()	()	()
1.18 Individual tactics	()	()	()	()	()
(list key sport-specific elements)	()	()	()	()	()
1.19 Team tactics	()	()	()	()	()
(list key sport-specific elements)	()	()	()	()	()
1.20 Information processing	()	()	()	()	()
1.21 Decision-making	()	()	()	()	()
1.22 Goal setting	()	()	()	()	()
1.23 Visualization	()	()	()	()	()
1.24 Distraction control	()	()	()	()	()
1.25 Emotional control	()	()	()	()	()
1.26 Relaxation	()	()	()	()	()
1.27 Activation	()	()	()	()	()
1.28 Team cohesion	()	()	()	()	()
1.29 Other	()	()	()	()	()

Step 2: Assess the Athlete(s) or the Team

Using normative data, competition or test results and/or your best judgment, assess the actual status of your athlete(s) or team in the following areas (e.g. superior; above average; average; below average):

	SUP	+AV	AV	-AV
2.1 Anaerobic alactic power	()	()	()	()
2.2 Anaerobic alactic capacity	()	()	()	()
2.3 Anaerobic lactic power	()	()	()	()
2.4 Anaerobic lactic capacity	()	()	()	()
2.5 Aerobic power	()	()	()	()
2.6 Aerobic endurance	()	()	()	()
2.7 Maximum strength	()	()	()	()
2.8 Relative strength	()	()	()	()
2.9 Strength endurance	()	()	()	()
2.10 Power	()	()	()	()
2.11 Speed	()	()	()	()
2.12 Coordination/agility	()	()	()	()
2.13 Flexibility	()	()	()	()
2.14 Artistic sense	()	()	()	()
2.15 Kinesthetic sense	()	()	()	()
2.16 Weight management	()	()	()	()
2.17 Technique/skills				
(list key sport-specific elements)	()	()	()	()
2.18 Individual tactics				
(list key sport-specific elements)	()	()	()	()
2.19 Team tactics				
(list key sport-specific elements)	()	()	()	()
2.20 Information processing	()	()	()	()
2.21 Decision-making	()	()	()	()
2.22 Goal setting	()	()	()	()
2.23 Visualization	()	()	()	()
2.24 Distraction control	()	()	()	()
2.25 Emotional control	()	()	()	()
2.26 Relaxation	()	()	()	()
2.27 Activation	()	()	()	()
2.28 Team cohesion	()	()	()	()
2.29 Other	()	()	()	()

Step 3: Evaluate last year's program:

Evaluate the strengths and weaknesses of the former year's plan in the following areas:

3.1. Training/preparation

- 3.1.1. Physical components (Energy systems; Strength and Power; Flexibility)
- 3.1.2. Technical components
- 3.1.3. Tactical components (Individual and Team tactics)
- 3.1.4. Mental components
- 3.1.5. Ancillary components (Testing; Warm up and Cool down; Hydration and Nutrition; Recovery and Regeneration; School; Social life)

3.2 Performance

- 3.2.1 Physical components
- 3.2.2 Technical components;
- 3.2.3 Tactical components;
- 3.2.4 Mental components;
- 3.2.5 Competitions (number; frequency; level; etc.)
- 3.2.6 Tapering and peaking procedure (nature of activities; duration; volume of work)
- 3.2.7 Ancillary components (Pre-competition warm up; Post-competition Cool down ; Pre-race hydration and Nutrition; Recovery and Regeneration; Acclimatization)

3.3 Summary: strength of the former year's program

- 3.3.1. Training:
- 3.3.2. Performance:

3.4 Summary: weaknesses of the former year's program

- 3.4.1. Training:
- 3.4.2. Performance:

Step 4: Set general goals and objectives for the new program

Based on the previous analyses, identify general objectives (training and performance) for the program you are about to design. Be specific, and list measurable items.

4.1 Performance objective(s) (ex.: Top 8 at Provincial Championship)

4.2 Training objective (s) (ex.: increase maximum aerobic power by 3%)

Step 5: Identify the Events of new Program

5.1. Calendar planning

5.1.1 Identify all the relevant competitions of the new season.

5.2. Optimize competition selection

- 5.2.1. Ensure that there are enough competitions before each major peak to provide for optimum form when required.
- 5.2.2. Identify the importance of competitions relative to each other (preparatory; important; decisive; peak performance)
- 5.2.3. Ensure that there are not too many competitions and your athletes will not arrive to a major meet in a fatigued state.
- 5.2.4. Ensure that the level of competition is appropriate given the developmental level and needs of the athletes.

5.3. Identify training camps of the new program and their duration.

5.4 Identify sport science and medicine evaluation sessions of the new program

- 5.4.1 Physiological
- 5.4.2 Psychological
- 5.4.3 Medical
- 5.4.4 Other

5.5 Identify school dates that may have an impact on athlete(s)/ team preparation

5.5.1 Holidays

5.5.2 Examination periods

5.5.3 Other activities

Step 6: Determine the type of Periodization used in your program

Determine the number of competition periods featured in your program. This will determine the type of Periodization:

- Single
- Double
- Multiple

Notes

- A Single Periodization features one Competition Period culminating in one main performance outcome (ex.: league with regular season activities in the fall and the winter and play-offs during the spring).
- A Double Periodization features two distinct Competition Periods (ex.: summer and winter competitive seasons).
- A Multiple Periodization features more than two distinct Competition Periods and several instances where the athlete is expected to reach a high performance level.

Step 7: Determine the duration of the Competition Period(s)

7.1 The number of weeks between the first and the last competition will determine the *Competition Period* of the new program.

7.2 If you intend to implement Double or Multiple Periodization, clearly identify each *Competition Period(s)* as above.

Step 8: Determine the duration of the Transition period(s)

8.1. Identify the time frame of the period(s) immediately following each *Competition Period*, e.g. the *Transition Period(s)*.

8.2. If you intend to implement *Double* or *Multiple Periodization*, identify *Transition Period(s)* two and/or three as above.

Step 9: Determine the duration of the Preparation period(s)

9.1. Identify the time frame of the period(s) immediately preceding each *Competition period*, e.g. the *Preparation period(s)*.

9.2. If you intend to implement Double or Multiple Periodization, identify each *Preparation Period(s)* as above.

Notes and general remarks

In ProPulses PLAN, the start date of a new program corresponds to the first day of the first Preparation Period.

In the case of a single Periodization, the Preparation Period may be long (4-6 months). The Competition Period may also last several months. A 3- to 5-week Transition Period featuring active rest and participation in other sports or forms of activity usually rounds out the annual plan.

In the case of a Double Periodization, the first Preparation Period is normally shortened (2 to 4 months). It is followed by a first Competition Period (variable duration) and then by approximately 2-3 weeks of active recovery. The latter is not really a Transition Period, but rather a decrease in the training load with active rest. After a relatively short resumption of training (e.g. a second Preparation Period of a few weeks), the second Competition Period begins, and can last several months. A 2- to 4-week Transition Period usually rounds out the annual Plan.

A triple or Multiple Periodization is usually characterized by a relatively short Preparation Period. The athlete takes part in a large number of competitions that may be spread out over most of the year. Therefore, the athlete seeks to (1) maintain a relatively high level of specific fitness over most of the annual program and (2) perform well over an extended period of time, often several months.

Compared to seasoned elite athletes, developing athletes generally benefit from a longer Preparation Period.

A Double or Multiple Periodization may be suited to athletes who have trained for several years at an advanced level. However, it is not appropriate for beginners, or athletes who are still at the developmental stage.

Periods can be broken down into Phases (see Steps 10, 11 and 12). Subdividing a Period into Phases makes it possible to specify how training and competition activities are expected to evolve as the identified performance objective(s) gets closer. Phases are usually several weeks long.

For more information about these concepts, consult the 3M NCCP Coaching Theory manuals or Level 4/5 Task #12 Readings.

Step 10: Determine the Phases of each Period of your program

For each *Period* featured in your plan, determine the duration of each *Phase*. Begin with the last *Competition Period*, and work your way backward to the beginning of the plan.

10.1 Phases of the Competition Period(s)

For each *Competition Period* featured in your plan, indicate *Phases* where competitions can be of variable importance, e.g.:

- Preparatory competitions
- Regular league competitions
- Play-offs
- Major competitions
- Etc.

During the *Competition Period*, Volume is low to moderate, and Intensity is high. The emphasis is on fine tuning technical and tactical components, while maintaining specific fitness.

10.2 Pre-competition Phase of the Preparation Period (PCP)

The *Pre-competition Phase* of the *Preparation Period* is positioned immediately before the *Competition Period*.

In the case of a *Single Periodization* program, the *Pre-competition Phase* may last 3 to 5 weeks. In the case of *Double* or *Multiple Periodization*, the second *Pre-competition Phase* is usually relatively short, e.g. 2-3 weeks.

During the *Pre-competition Phase*, the following objectives are usually sought:

- Fine tuning of preparation through exhibition games.
- Very specific training.
- Increased intensity to a level approaching what will be encountered during the *Competition Period*.

10.3 Specific Phase of the Preparation Period (SPC)

The *Specific Phase* precedes the *Pre-competition Phase*.

In the case of a *Single Periodization* program designed for developing athletes, the *Specific Phase* may last 6 to 8 weeks, or more.

The *Specific Phase* is usually longer than the *General Phase* in the case of seasoned elite athletes.

10.4 General Phase of the Preparation Period (GPP)

The General Phase comes first in the plan. It follows the Transition Period. In the case of a single Periodization program designed for developing athletes, the General Phase may last 8 to 12 weeks, or more. However, it is usually shorter in the case of a program featuring Double or Multiple Periodization designed for more experienced athletes, as more time is devoted to training activities that are specific to the event.

During the General Phase, the following objectives are usually sought:

- *Progressive increase of training volume*
- *Maintenance of key performance factors to avoid significant detraining*
- *Introduce new skills*
- *Improve identified weaknesses*
- *Develop overall fitness*

10.5 Phases of each Transition Period

Phases of the Transition Period are normally relatively short.

The *Transition Period* should include one week where minimal training is performed (immediately after the end of the *Competition period*), followed by one, two or more weeks of active recovery.

Complete inactivity over an extended period of time should be avoided as significant detraining might occur.

Step 11: Determine the importance of key performance factors throughout the plan

Determine the relative importance given to the training of each performance factor throughout the year:

- Maintenance
- Secondary priority
- Major emphasis

Note

- *Depending on the demands of the sport, key performance factors should be trained throughout the year in order to avoid too much de-training and loss of specific performance capability gained during the previous year.*
- *Maintenance is best achieved by reducing the volume of training and avoiding a significant decrease in the intensity. Frequency may be reduced as well, particularly in the early part of the program.*
- *Achieving a significant improvement in a performance factor may require several weeks of training (4-6) on a basis of 2 to 4 sessions per week.*

- *It is possible for distinct performance factors to be developed simultaneously (ex.: strength and aerobic qualities). However, a plateau effect may be observed in one or the other after a few weeks.*
- *Elite athletes may benefit from specialized training emphasizing the development of one or two performance factors with similar metabolic or neural requirements over a few weeks (ex.: speed and muscular power; maximum aerobic power and high power endurance; etc.) as opposed to the simultaneous development of distinct factors.*

Step 12: Determine the expected progression of the workload throughout the plan

It can be helpful to graphically depict the changes that are expected to happen over time in variables such as Volume, Intensity, level of Fatigue and/ performance capability. This will allow you to visualize the progression in the training load, and anticipate changes in the athletes' performance capability.

Plot a preliminary chart of Volume and Intensity of training on your yearly planning instrument.

If necessary, indicate how other variables are expected to evolve, too.

Notes:

- *The Volume of training refers to the amount of work performed by the athlete over a given period of time. Variables such as time (minutes, hours), distance (m, km, miles, etc.) or number of repetitions can be used to express Volume.*
- *Intensity refers to the power the athlete must generate during effort. It may be expressed in Watts, or as a function of variables such as speed (km/h; mph; s/lap; min:s/km; etc.); percentages of VO_2 max, maximum speed, maximum strength, heart rate; intensity of competition; coefficient of difficulty; perceived exertion; etc.*
- *Volume and Intensity are thus two separate components of the training load. As a general rule, the higher the Intensity, the lower the Volume will tend to be. In addition, Intensity should follow a certain progression within a Plan, with its highest level occurring during important competition Phases, thus reflecting the greater specificity that should characterize the training content of Microcycles and sessions at such times.*
- *It is often difficult to precisely estimate the intensity of an exercise or*

session, particularly in the case of a team, combative, technical or artistic sport. Therefore, the values displayed in a Plan often reflect a subjective evaluation on the part of the coach.

- *When applied to a Microcycle, the concept of Intensity should represent the average value of all the sessions that comprise it; this tends to make it more difficult to establish a precise value.*
- *Despite these limitations, it remains of interest to describe the concept of Intensity in a plan, thus showing a general trend over time and providing a point of reference for the selection of training methods and means.*

Step 13: Re-assess previous Steps

Using:

- Retrospective analysis of the former years of training and performance:
 - Competitive performances
 - Training records
 - Laboratory test results
 - Field test results
 - Mental training records
 - Injury and sickness report
- Testing and monitoring session prior to planning:
 - Laboratory tests
 - Field test results
 - Performance test results
 - Psychological test results
 - Medical check up results
 - Nutritional assessment results
- Sport-, event- or position-specific normative data:
 - International normative data
 - National normative data
 - Provincial normative data
 - Energy system contribution to training and performance

Re-assess specific individual and/or team needs, demands, goals and objectives. Cross-reference this information with Steps no. 1 to 4.

Design a plan to bridge the actual capacity of your athlete(s) and/or teams with the desired international, national or provincial training and competition needs and activities.

Based on the above, re-assess

(1) The importance assigned to key performance factors in Step no. 11.

The duration of each Preparation, Competition and Transition Periods, and their related Phases, throughout your annual plan.

Step 14: Determine the Meso and Microcycle Planning structure of the plan

Notes

The term Macrocycle has been used to represent a group of microcycles (or weeks) of an annual plan. However, original Russian and German documents about the theory and methodology of training use the term Mesocycle, which is more appropriate from an etymology point of view. Indeed, the Greek meaning of Micro is “small”, while meso means “medium” and macro means “large”. In this text and in ProPulses PLAN, a decision was made to employ the international terminology. Therefore, Mesocycle will be used instead of Mesocycle.

Each Phase identified in Step no. 10 can be divided into Mesocycles, making it possible to identify what the focus of training should be on a short- to mid-term basis within the Plan.

The duration of Mesocycles is variable, ranging from 2 to 5 weeks.

Mesocycles tend to be longer during the Preparation Period (4-5 weeks) and shorter during the Competition Period (2-3 weeks). Mesocycles are useful to determine the number of weeks to be devoted, on a priority basis, to the development of certain performance Factors at different times of the year.

Mesocycles are comprised of smaller units, Microcycles.

Microcycles are usually the smallest units displayed in a yearly planning instrument. They consist of a sequence of training sessions spread out over a few days—usually one week. However, Microcycles may be longer or shorter, depending upon training requirements or competition schedules.

Each Mesocycle usually ends with a week of more “easy” training, which allows the athlete to recover. Thus, a 5-week Mesocycle can be represented by the figures “4:1”, which means four weeks of training that feature a certain progression, followed by one less intense week. A 1:1 Mesocycle would mean one intense week, followed immediately by one “easier” week; this type of load sequencing is used primarily during the Competition Period.

For more detailed information concerning these concepts, consult the Planning glossary in Appendix 1, the documentation for Level 3 Theory of the 3M NCCP, or Level 4/5 Task #12 of the 3M NCCP.

14.1 Insert Mesocycles in the Phases of your annual plan

14.1.1 Start your design with the last *Mesocycle* of *Pre-competition Phase* of the *Preparation Period*, and work your way backward. Remember: a *Mesocycle* can range from two to several weeks.

14.1.2 Continue backward again from the last week of the *Specific Phase*.

14.1.3 Continue backward again from the last *Microcycle* of the *General Phase* until the beginning of the annual plan.

14.1.4 Repeat this procedure and insert *Mesocycles* within the *Competition Period*, applying the principles of taper and peak where necessary.

14.1.5 If you selected *Double* or *Multiple Periodization* start your design with the last or most important cycle of the annual plan, and work your way back to the first cycle.

14.2 Re-evaluate Mesocycle distribution from the point of view of:

14.2.1 Training camps

14.2.2 Regeneration cycles or prophylactic breaks

14.2.3 Official holidays

14.2.4 School, college or university exam periods

14.2.5 "Train-through", minor and major competitions, optimum taper and peak

- 14.2.6 Environmental factors, i.e., jet lag, heat, humidity, altitude, etc.
- 14.2.7 Availability of training facilities

14.3 Finalize Mesocycle distribution

In this process, keep in mind that the objectives of *Mesocycles* are determined by objectives of the long term plan, followed by those of the annual plan, then by the objectives of the particular Period or Phase of the annual plan.

14.3.1. Identify the Theme of each *Mesocycle*:

- Progressive loading pattern
- Regressive loading pattern
- Maintenance
- Taper
- Recovery or restorative
- Etc.

14.4 Adjust progression curves, if necessary

Based upon the established *Mesocycle* and *Microcycle* structure and themes, draw your final volume and intensity chart on your yearly planning instrument.

Ensure that the training and competition loads address the technical, tactical, physical, mental and recovery-regeneration components.

14.5 Indicate the theme and loading pattern of the Microcycles of the first Mesocycle

14.5.1 Determine the duration of and assign a theme to each *Microcycle* of the first *Mesocycle* of your annual plan, for instance:

- Introduction
- Development

14.5.2 Indicate the loading pattern (fatigue level) for each day of the first Mesocycle. Use the *Mesocycle-Load* window to enter this information.

14.5.3 Determine the number training sessions for each day of the first *Mesocycle*, and sequence these sessions to provide optimum training adaptation and to optimize recovery and regeneration. As a general rule, you may:

- Identify the performance factors that need to be trained in priority given the mesocycle and the phase of the YTP.
- Identify the theme of the microcycle (preparatory; developmental; shock; recovery; taper; etc.).
- Identify the "load peaks" within the microcycle (1, 2 or 3).
- Determine whether the performance factor(s) can be trained in a state of fatigue. If not, make sure the appropriate recovery period has taken place, and that the athlete is ready to support the load.
- If there is a competition scheduled at the end of the micro and the athletes are expected to perform (or if the competition is preparatory and represents a "quality training session") make sure at least two light days precede the event, and schedule the other "load peak" accordingly.
- Sequence the activities in the optimal manner within the "peak" day(s) if there is more than one training session (see "Supplementary information").
- Plan the recovery/regeneration activities for the key performance factors trained on "peak" days (nutrition; modalities; etc.).
- Plan the complementary/maintenance sessions around the "peak load days", in a way that reduces the possible negative effects of interference.
- Plan the recovery/regeneration activities for the complementary and/or maintenance sessions (nutrition; modalities; etc.).
- Verify again that all principles are respected!!!

Notes

You need to establish the structure of your annual program now, but there are no guarantees that the athlete will adapt exactly as planned. Therefore, only 3-5 weeks, or the first Mesocycle of training, should be planned in great details at this stage.

Thereafter, constant adjustments may be required as a result of the monitoring performed.

Step 15: Design the training sessions of the first Microcycle

When planning the sessions of a *Microcycle* indicate:

- The session's theme (e.g. Training, Competition, Testing)
- Logistical information (e.g. time, location)
- Key performance factor(s) to be trained in each part of the session
- Objective (e.g. Development, Maintenance, Stabilization, etc.)
- Type of activities (e.g. Continuous, Intermittent)
- Mode of activities (e.g. running, cycling, swimming; etc.)
- Nature of activities
- Conditions
- Loading parameters (e.g. Volume, Intensity, Type of Recovery, etc.)
- Recovery means or strategies to be employed

Supplementary information: Effect of fatigue on the development of some performance factors

Performance factors that are not likely to be improved or developed in a state of fatigue

- Pure speed
- Acquisition/refinement of new motor patterns (technique)
- Coordination/technical execution at high or specific speed
- Speed-strength
- Maximal strength

Performance factors that can be improved or developed in a state of low fatigue

- Speed endurance (alactic capacity-lactic power)
- Strength endurance
- Technique (if the objective is to stabilize the motor pattern under a variety of conditions)

Performance factors that can be improved or developed in a state of moderate fatigue

- Lactic capacity
- Aerobic power
- Specific sub-maximal aerobic endurance (ex.: race pace for a marathon)
- Technique (if the objective is to stabilize the motor pattern under a variety of conditions)

Performance factors that can be improved or developed in a state of moderate to high fatigue

- General aerobic endurance
- Flexibility

Supplementary information: general principles and guidelines regarding the sequencing of training activities within a microcycle or within a training session

- The following recommendations apply to the sequencing of training activities within a microcycle or within a day:
- Technical skill work (e.g. learning of new skills) should always be performed before any other type of training, e.g. when the central and neuromuscular systems have not been fatigued through other forms of training. This type of training should therefore always be performed first during a session, or after a recovery day within a microcycle..
- Based on the same principles, pure speed should come next and be trained before any other physical quality.
- The anaerobic alactic system should be trained before the anaerobic lactic system.
- The anaerobic alactic system should be trained before the aerobic system.
- The anaerobic lactic system should be trained before the aerobic system.
- High intensity aerobic qualities (e.g. maximum aerobic power) should be trained before lower intensity qualities (e.g. long slow distance).
- The training of flexibility does not seem to significantly affect other qualities.

In other words: quality should always come first!

Variables that can be manipulated during a Taper

The following variables can be manipulated to modify the training load during a tapering phase:

- Taper duration
- Volume of training performed
- Intensity of training
- Frequency of training
- Recovery time (between sessions/exercises)
- Nature of training activities

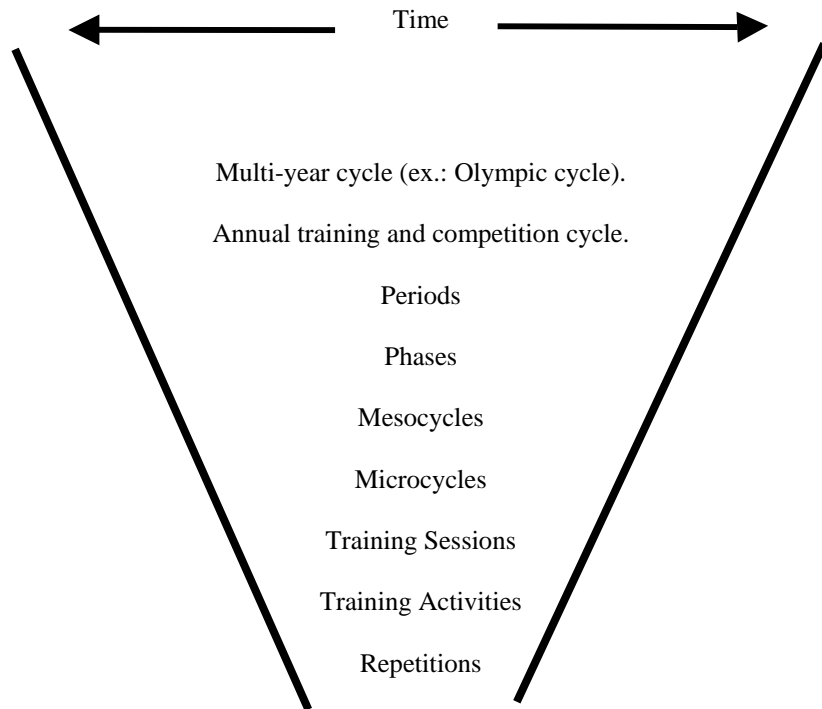
Characteristics of successful tapering procedures

1. The **training volume** is markedly reduced throughout the taper phase.
2. The **volume of high-intensity training** remains high.
3. The **level of difficulty** of training sessions is reduced (by increasing the duration of recovery between repetitions and/or series).
4. The **weekly frequency** of training sessions is reduced only minimally or not at all.
5. The duration of the taper period can vary between **4 and 21 days**.
6. Activities performed during the taper period are **highly specific** to the athlete's competitive demands.

Additional considerations:

- Optimal taper duration is highly individual, and varies from one athlete to another.
- Older athletes may need a longer taper.
- The harder the training has been leading to the taper, the longer it may have to be.
- Compared to endurance athletes, strength/power athletes seem to need a longer taper.
- It is unclear if gender differences exist re. optimal taper duration. Anecdotal information suggests that, compared to males, female athletes may benefit from a slightly longer taper.

The Structure of Planning: a Summary



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