OVERVIEW

TRENINGS PRINSIPPER

STRUKTUREN TIL ÅRSPLANEN

1. The Classical Periodization Model
2. The Exercise Physiology Model
3. The Empirical Model
4. Et eksempel fra praksis

TEKNIKK TRENING METODIKK

PRINCIPLES

THE PRINCIPLE OF LOAD PROGRESSION

- Training loads of a constant nature provide less and less stimulus as the athlete adapts.
- Therefore, ↑ in load is necessary to reach new levels of performance.
- Increase load by:
  1. ↑ volume.
  2. ↑ intensity.
  3. ↑ specificity.
  4. ↑ variety.

PRINCIPLES

THE PRINCIPLE OF MODERATION

- While sport comes first, every athlete should develop a balanced approach to life.

- Time available to training is limited by:

1. Athlete's energy level.
2. Athlete's ability to recover.
3. Other needs in life (family, job, spouse, etc.).

PRINCIPLES

THE PRINCIPLE OF FEASABILITY

- Although loads must ↑, athletes should be presented with a regimine that is realistic in terms of both volume and content.

- The object of training is improvement, not discouragement or defeat.

PRINCIPLES

THE PRINCIPLE OF REVERSIBILITY

- When an athlete reduces the amount of training, or ceases training, training adaptations plateau and eventually decay.

- Functional, sport-specific capacities, in particular, are probably susceptible to rapid detraining.

PRINCIPLES

THE PRINCIPLE OF CONTINUOUS LOAD DEMAND

- Long interruptions in the training process should be avoided.

PRINCIPLES

THE PRINCIPLE OF THE WAVE-LIKE FLUCTUABILITY OF THE LOAD

- The training load should vary between periods of high load and periods of low load.

- Periodic recovery periods should be incorporated to avoid excessive strain that could later result in training being restricted for a prolonged period (Principle of continuous load demand).

PRINCIPLES

THE PRINCIPLE OF SPECIFICITY

- The body adapts very precisely to the type of training that is completed.

  1. Muscles used.
  2. Energy system.
  3. Amount and character of forces.
  4. Speed, frequency, range, type of movement.

PRINCIPLES

THE PRINCIPLE OF SPECIFICITY

- General preparation (GP).

  ... That training which expands the prerequisites for successful engaging in the selected sport and promotes perfectioning in it on the basis of the comprehensive development of the athlete.

- Specific preparation (SP).

  ... Training specific to the competitive activity.

- Competition specific preparation (CSP).

  ... Training where all aspects of the athlete's preparation are rehearsed in a competitive situation.

PRINCIPLES

THE PRINCIPLE MULTILATERAL DEVELOPMENT

- Although training must ensure a maximum degree of specialization of the athlete in a certain sport, the highest performance level which can be reached is ultimately limited by the athlete's many-sided or general development.

PRINCIPLES

THE PRINCIPLE MULTILATERAL DEVELOPMENT

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THE PRINCIPLE MULTILATERAL DEVELOPMENT

- Although training must ensure a maximum degree of specialization of the athlete in a certain sport, the highest performance level which can be reached is ultimately limited by the athlete's many-sided or general development.

- The relationship between GP and SP.

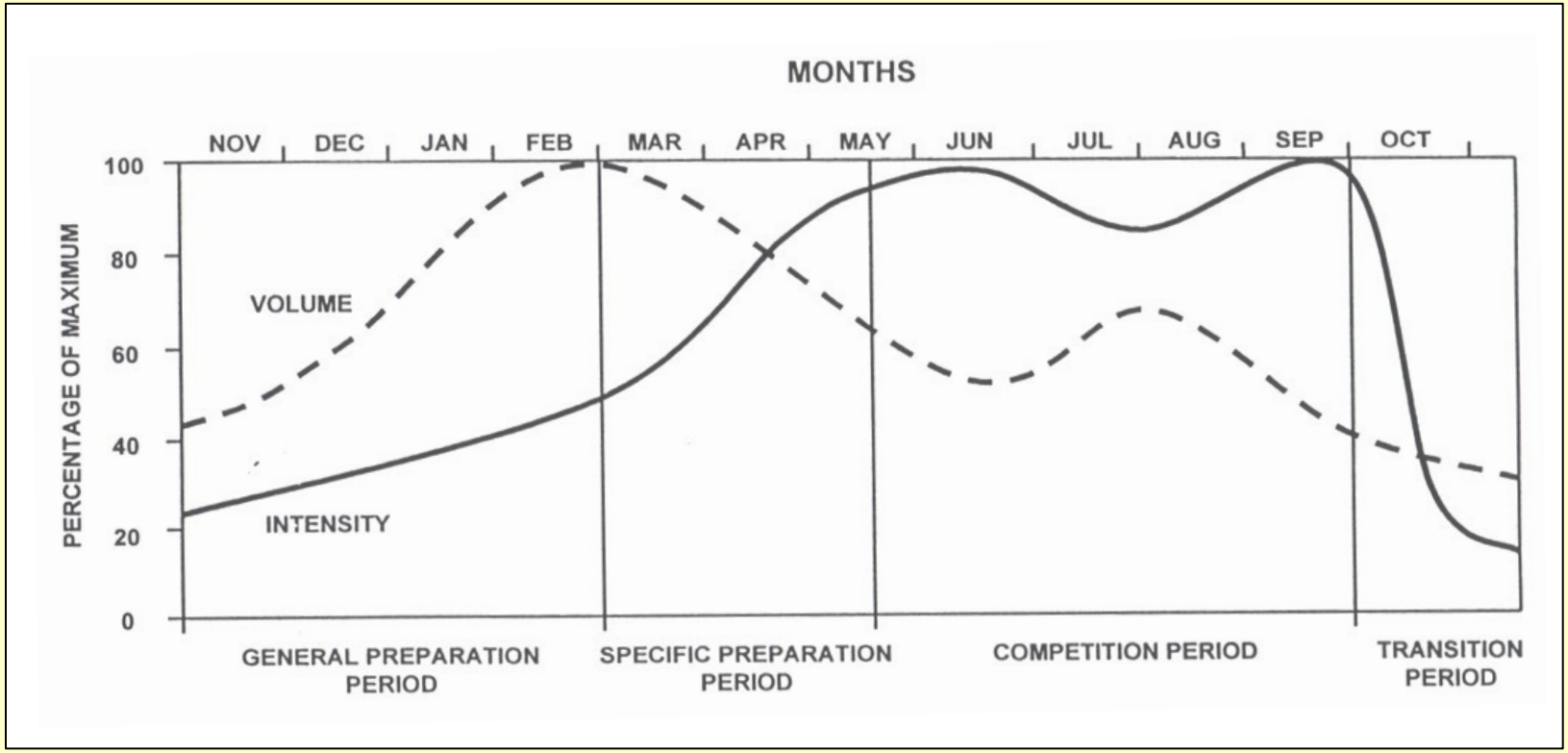
  1. First portion of training focused on GP. Proportion of SP increases over the course of the training year.

  2. Major and Aamodt have suggested that GP should be used more actively.

- The inverse relationship between volume and intensity

PRINCIPLES

THE PRINCIPLE MULTILATERAL DEVELOPMENT



PRINCIPLES

THE PRINCIPLE OF VARIETY

- When possible, one should include variety in training.

- Variety improves the effectiveness of training.
  1. Psychologically - ↑ motivation
  2. Physiologically - fights stagnation
  3. Technically - adaptation to varied conditions

- Variety prevents overtraining.

PRINCIPLES

THE PRINCIPLE OF INDIVIDUAL TRAINING RESPONSE

- The effect of a particular training load varies considerably from athlete to athlete.
- The effect of a particular training load also varies for the same individual over time.

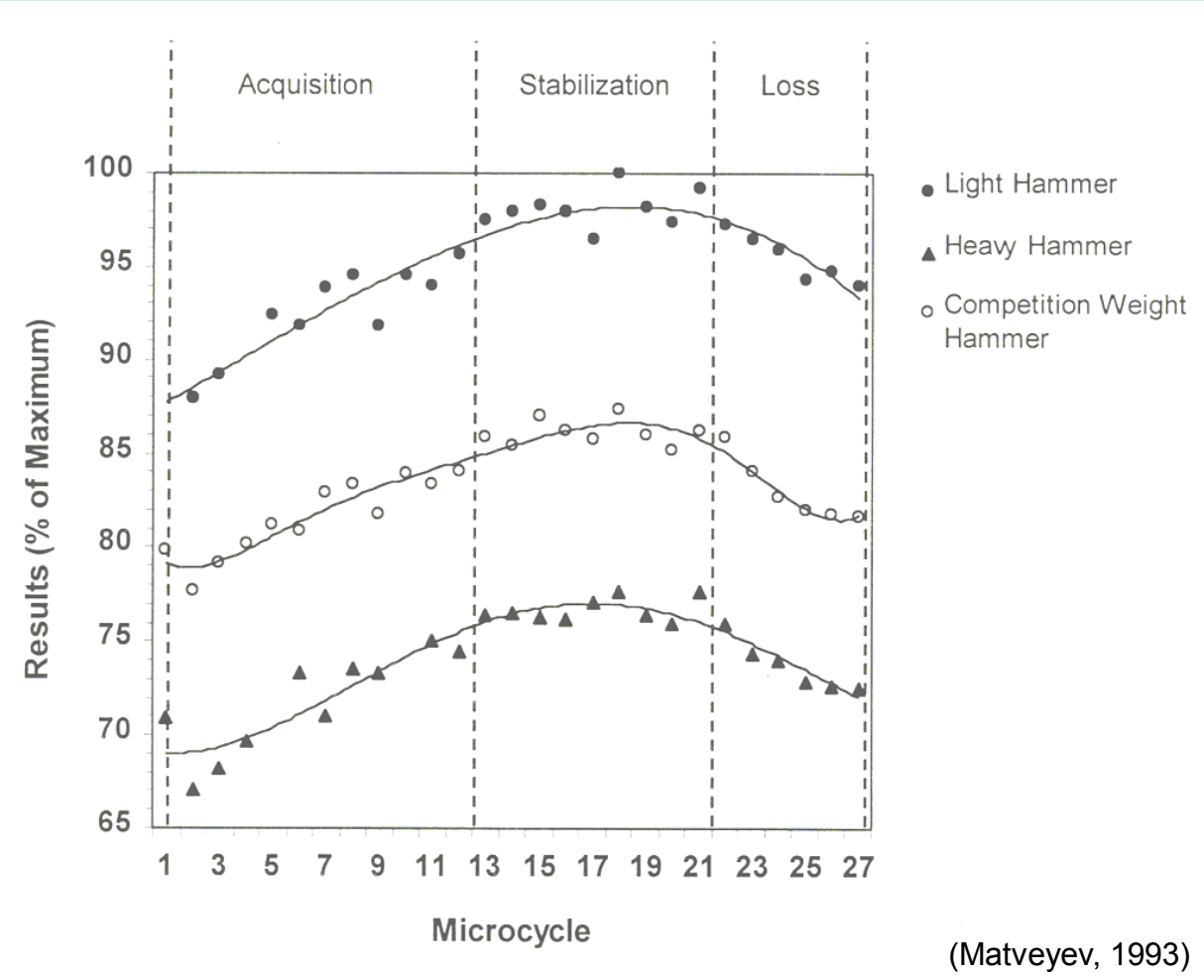
STRUCTURE OF THE ANNUAL PLAN

THE CLASSICAL PERIODIZATION MODEL

- The structure of the annual plan is based on:
  1. The calendar of competitions.
  2. Changing environmental conditions.
  3. The cyclic development of sporting form.

STRUCTURE OF THE ANNUAL PLAN

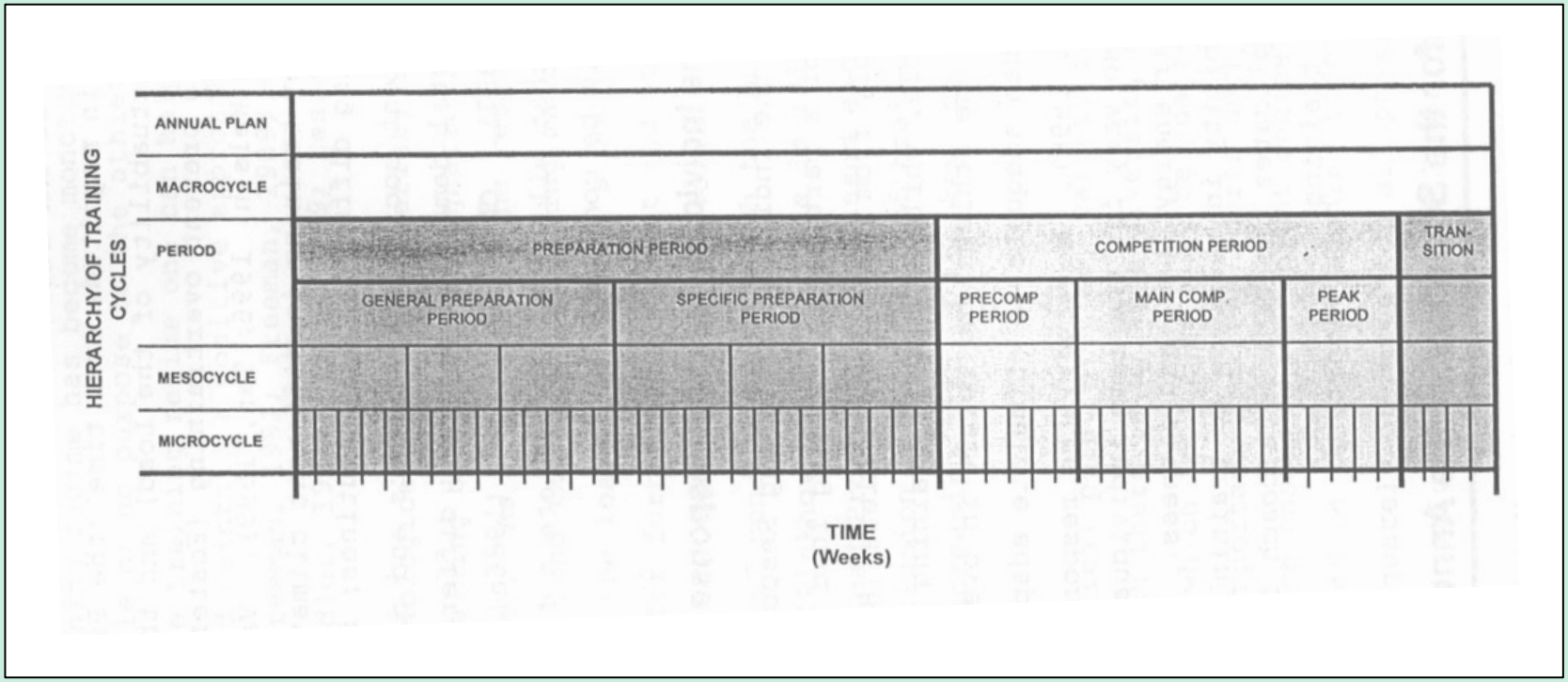
THE CLASSICAL PERIODIZATION MODEL



(Matveyev, 1993)

STRUCTURE OF THE ANNUAL PLAN

THE CLASSICAL PERIODIZATION MODEL



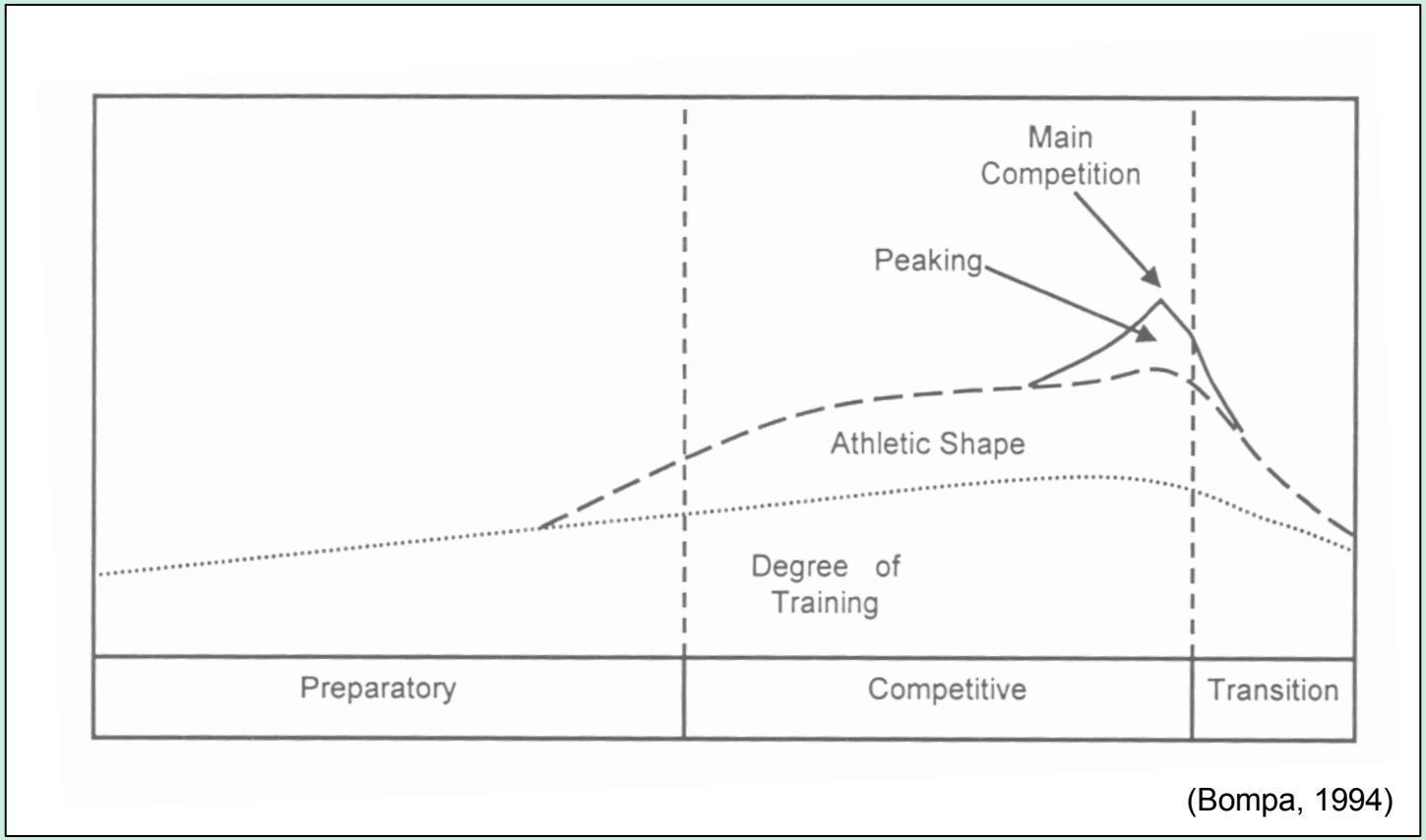
STRUCTURE OF THE ANNUAL PLAN

THE CLASSICAL PERIODIZATION MODEL

- **The preparation period**: The pre-requisites for a new, higher level of sporting form are created.
- **The competition period**: Main task is to create most favourable conditions for the realization of acquired sporting form in competition.
- **The transition period**: Due to the high level of physical and psychological stress of the competition period, it is important to have a period of recovery before starting a new preparation period.

STRUCTURE OF THE ANNUAL PLAN

THE CLASSICAL PERIODIZATION MODEL



(Bompa, 1994)

STRUCTURE OF THE ANNUAL PLAN

THE CLASSICAL PERIODIZATION MODEL

- Multiple periodization:

  1. Increases the volume of specific preparation.

  2. Breaks up a very long preparation period.

  3. More frequent recovery periods may lower the risk of overtraining.

STRUCTURE OF THE ANNUAL PLAN

THE CLASSICAL PERIODIZATION MODEL

- Critique

  1. Does not take into account our knowledge of biology.

  2. Has not evolved to take into account the demands of modern sport:

     a. Increased competition volumes.

     b. All competitions are important (45 world cup starts vs. 1 important race.

     b. Increased importance of specific preparation.

STRUCTURE OF THE ANNUAL PLAN

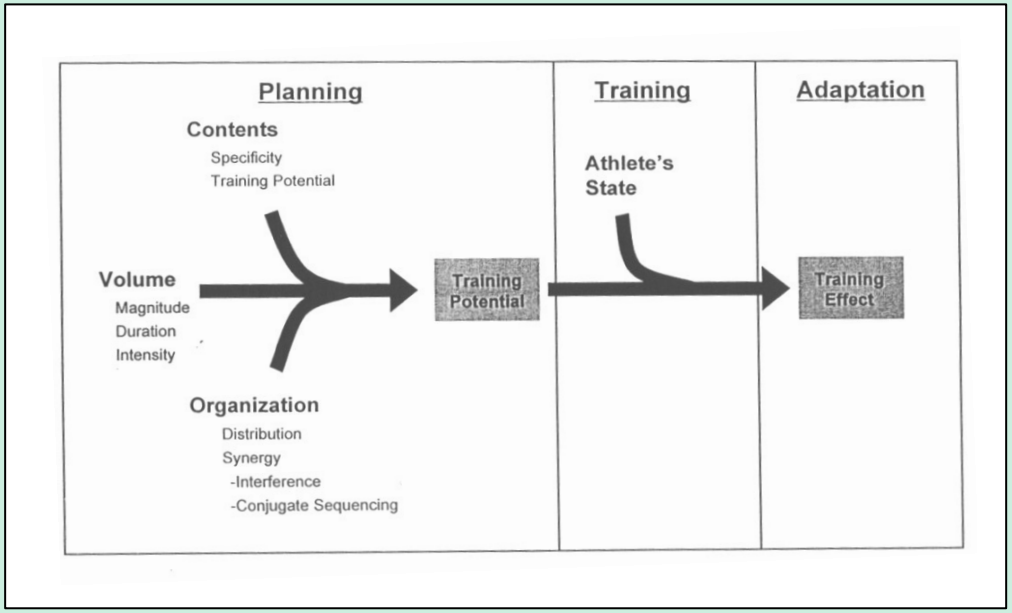
THE CLASSICAL PERIODIZATION MODEL

NOVEMBER			DESEMBER			JANUAR			FEBRUAR			MARS		
		WC H			WC H			WC H			WC H			WC H
Ti	1	TEST (VO2,STY)	To	1	BEAVER CR TR	Sø	1		On	1	CHAMONIX TR	To	1	KVITFJELL TR
On	2	KICK OFF	Fr	2	BEAVER CR DH	Ma	2	CITY EVENT	To	2	CHAMONIX TR	Fr	2	KVITFJELL TR
To	3	HØST EVAL	Lø	3	BEAVER CR SG	Ti	3		Fr	3	CHAMONIX TR	Lø	3	KVITFJELL DH
Fr	4		Sø	4	BEAVER CR GS	On	4		Lø	4	CHAMONIX DH	Sø	4	KVITFJELL SG
Lø	5		Ma	5		To	5	ZAGREB SL	Sø	5	CHAMONIX SC	Ma	5	
Sø	6	REISE	Ti	6		Fr	6		Ma	6		Ti	6	
Ma	7	FUNESDALEN	On	7		Lø	7	ADELBODEN GS	Ti	7		On	7	
Ti	8	FUNESDALEN	To	8		Sø	8	ADELBODEN SL	On	8	SOCHI TR	To	8	
On	9	FUNESDALEN	Fr	9		Ma	9		To	9	SOCHI TR	Fr	9	
To	10	FUNESDALEN	Lø	10	VAL DISERE GS	Ti	10	WENGEN TR	Fr	10	SOCHI DH	Lø	10	KRANSKA GS
Fr	11	REISE	Sø	11	VAL DISERE SL	On	11	WENGEN TR	Lø	11	SOCHI	Sø	11	KRANSKA SL
Lø	12	HT	Ma	12		To	12	WENGEN TR	Sø	12	SOCHI SC	Ma	12	
Sø	13	LEVI SL	Ti	13		Fr	13	WENGEN DH	Ma	13		Ti	13	SCHLADMING TR
Ma	14		On	14	GRØDEN TR	Lø	14	WENGEN SC	Ti	14		On	14	SCHLADMING DH
Ti	15	REISE	To	15	GRØDEN TR	Sø	15	WENGEN SL	On	15		To	15	SCHLADMING SG
On	16	NAKISKA / VAIL	Fr	16	GRØDEN SG	Ma	16		To	16		Fr	16	SCHLADMING GS
To	17	NAKISKA / VAIL	Lø	17	GRØDEN DH	Ti	17	KITZBUHEL TR	Fr	17		Lø	17	SCHLADMING SL
Fr	18	NAKISKA / VAIL	Sø	18	ALTA BADIA GS	On	18	KITZBUHEL TR	Lø	18	KOREA GS	Sø	18	SCHLADMING NTE
Lø	19	NAKISKA / VAIL	Ma	19		To	19	KITZBUHEL TR	Sø	19	KOREA SL	Ma	19	NM
Sø	20	NAKISKA / VAIL	Ti	20	ALTA BADIA NTE	Fr	20	KITZBUHEL DH	Ma	20		Ti	20	NM
Ma	21	NAKISKA / VAIL	On	21		Lø	21	KITZBUHEL SC	Ti	21		On	21	NM
Ti	22		To	22		Sø	22	KITZBUHEL SL	On	22		To	22	NM
On	23	LAKE L TR	Fr	23		Ma	23		To	23		Fr	23	NM
To	24	LAKE L TR	Lø	24		Ti	24	SCHLADMING SL	Fr	24	JAPAN GS	Lø	24	NM
Fr	25	LAKE L TR	Sø	25	JUL	On	25		Lø	25	JAPAN SL	Sø	25	NM
Lø	26	LAKE L DH	Ma	26		To	26	GARMISCH TR	Sø	26		Ma	26	
Sø	27	LAKE L SG	Ti	27	BORMIO TR	Fr	27	GARMISCH TR	Ma	27		Ti	27	
Ma	28		On	28	BORMIO TR	Lø	28	GARMISCH DH	Ti	28		On	28	
Ti	29	BEAVER CR TR	To	29	BORMIO DH	Sø	29	GARMISCH SG	On	29		To	29	
On	30	BEAVER CR TR	Fr	30		Ma	30					Fr	30	
			Lø	31		Ti	31					Lø	31	

STRUCTURE OF THE ANNUAL PLAN

THE EXERCISE PHYSIOLOGY MODEL (blokk trening)

- The structure of the annual plan is based primarily on how the body adapts to training.



- Increased emphasis on specific training.
- GP is used to enhance recovery from SP by providing variety.

STRUCTURE OF THE ANNUAL PLAN

THE EXERCISE PHYSIOLOGY MODEL

- **Interference**

  1. Maximum strength and aerobic endurance.
  2. Physical conditioning and technique training.

- **Distributed, complex training:**

  Makes use of a number of training tasks with different primary emphasis simultaneously for prolonged periods.

- **Concentrated, unidirectional training:**

  Complex training does not provide enough stimulus to cause adaptation in highly trained athletes.
  Concentrate SP into short blocks to increase stimulus.

STRUCTURE OF THE ANNUAL PLAN

THE EXERCISE PHYSIOLOGY MODEL

- **Conjugate sequencing:** How training of different primary emphasis is arranged chronologically in the annual plan.

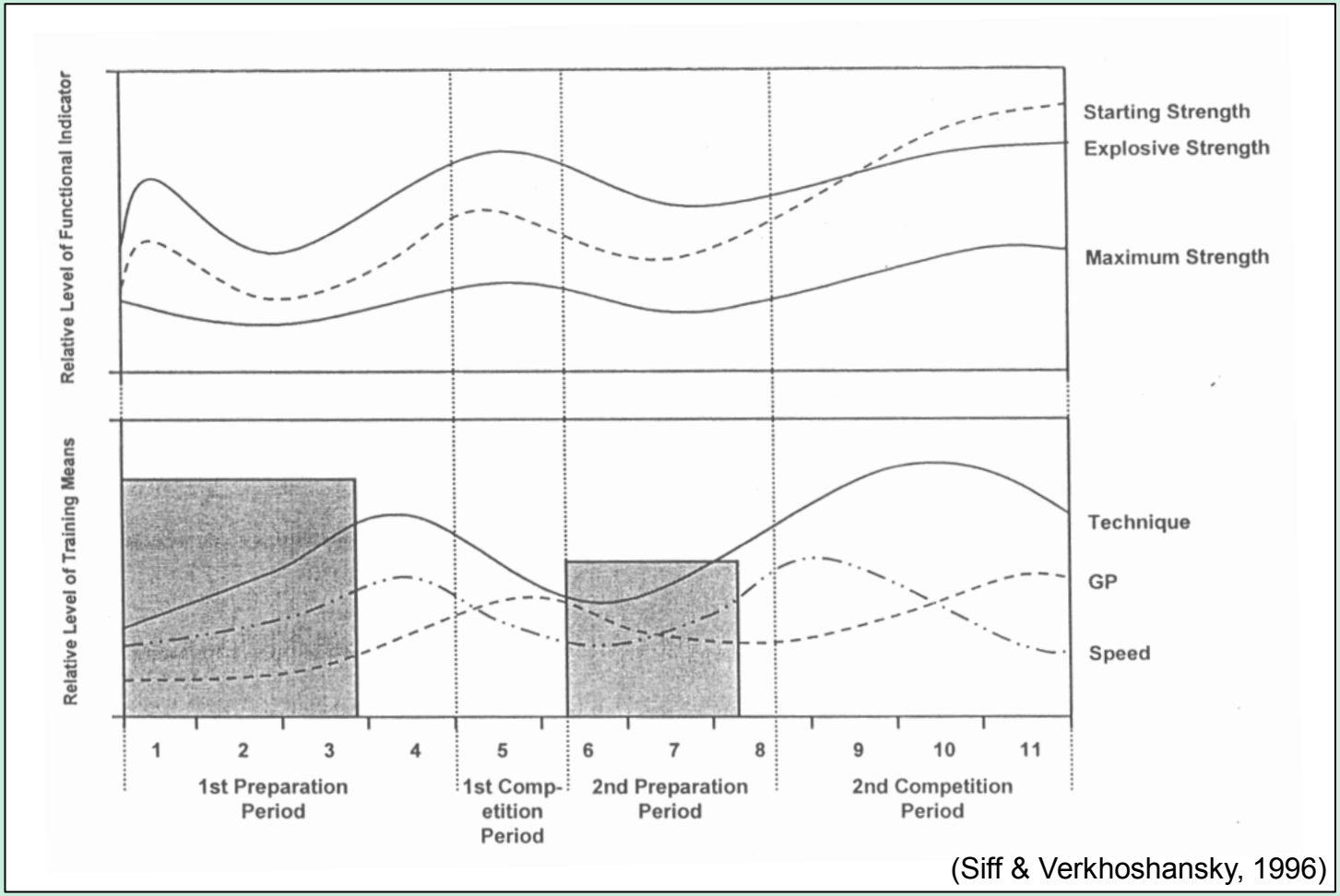
  1. Progression in the training potential of the loading = the principle of load progression.

  2. Proper sequencing of the training of different primary emphasis. Each block period should build upon the previous.

  3. Exploitation of the long term lag in the training effect.

STRUCTURE OF THE ANNUAL PLAN

THE EXERCISE PHYSIOLOGY MODEL



(Siff & Verkhoshansky, 1996)

STRUCTURE OF THE ANNUAL PLAN

THE EXERCISE PHYSIOLOGY MODEL

- Critique
  1. Biology is only one aspect of preparation.
  2. Unidirectional training leads to monotony.
  3. The risk of overtraining.

STRUCTURE OF THE ANNUAL PLAN

THE EMPIRICAL MODEL

The Distribution of On Snow Training Periods.

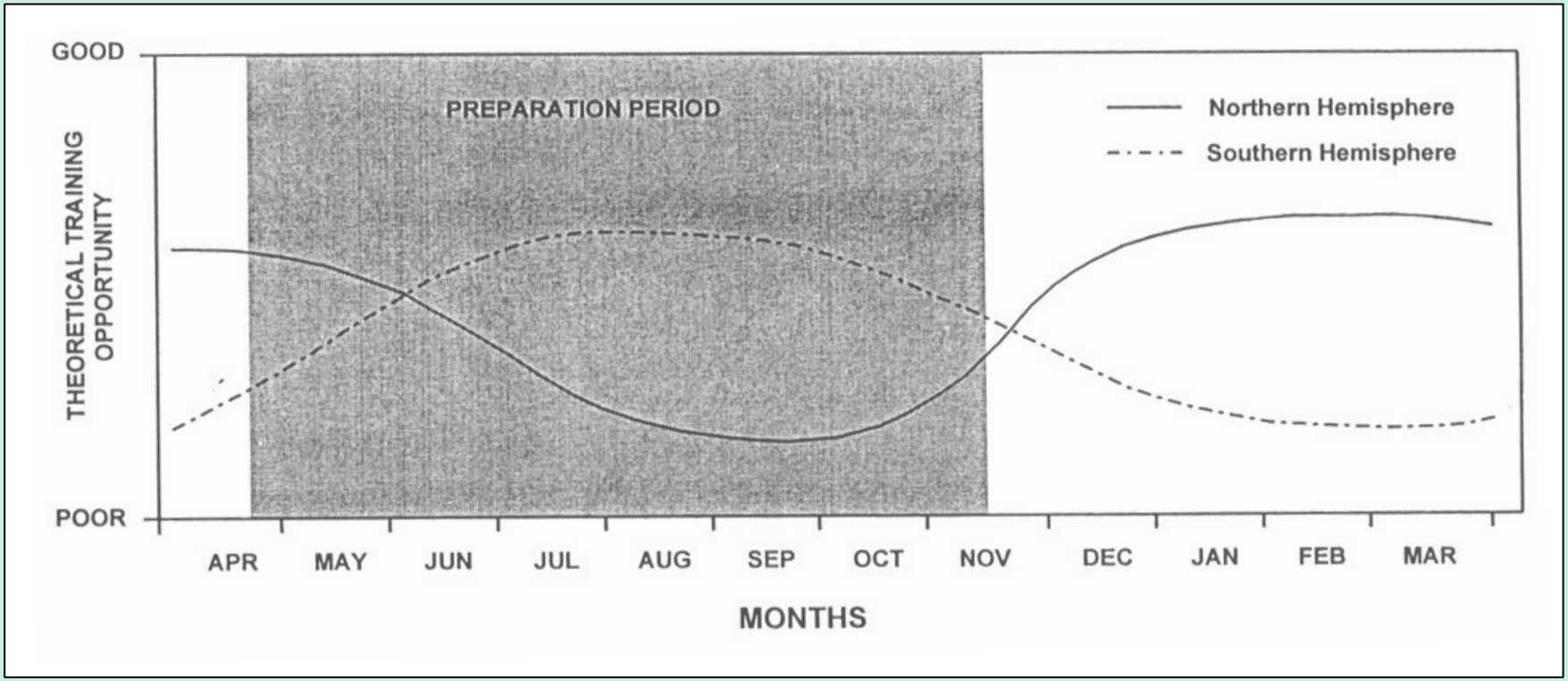
- Considerable resources are necessary to create a quality on snow training environment.

- Carry - over.
  1. Carry-over from the previous competition period
  2. Carry-over from one on snow training period to the next.
  3. Carry-over from preparation to the first competitions.

- The time of year and the quality of training opportunity.
- Constraints: Budget and travel.

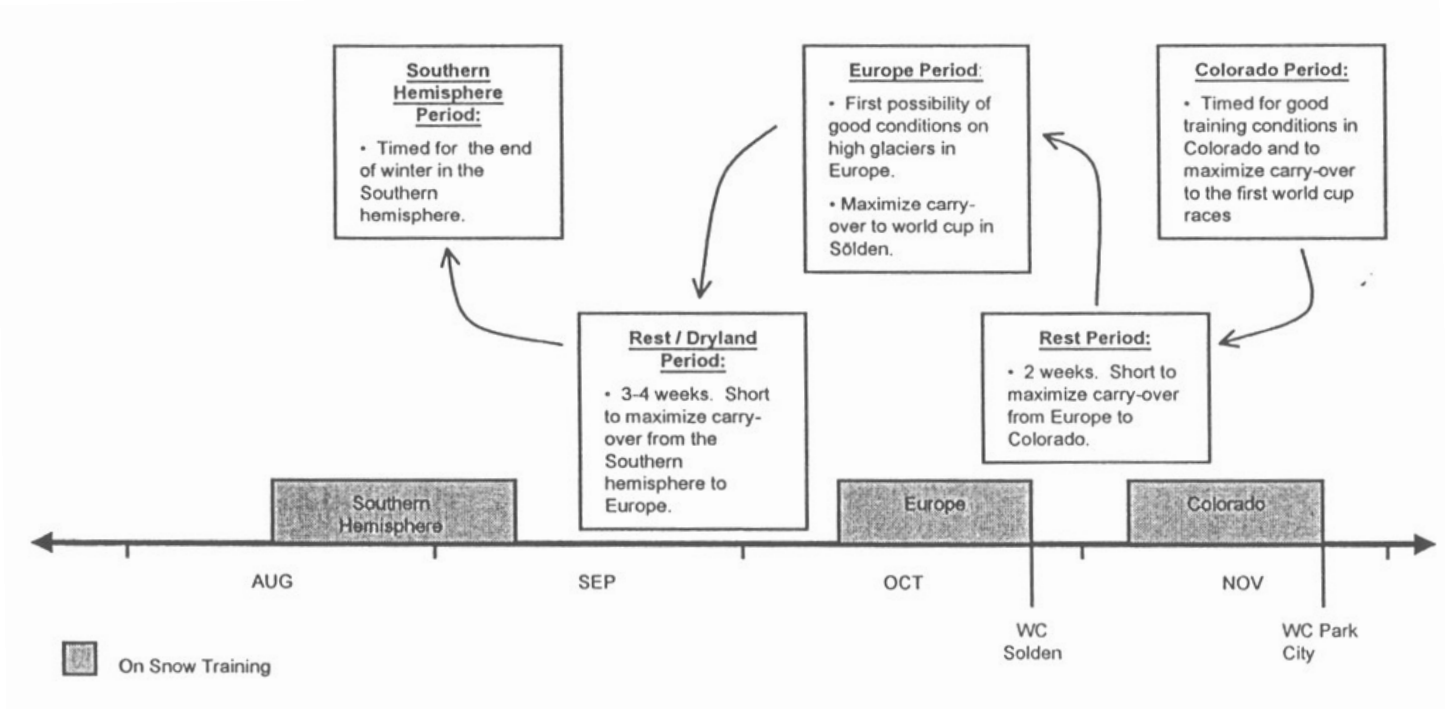
STRUCTURE OF THE ANNUAL PLAN

THE EMPIRICAL MODEL



STRUCTURE OF THE ANNUAL PLAN

THE EMPIRICAL MODEL



STRUCTURE OF THE ANNUAL PLAN

THE EMPIRICAL MODEL

The Distribution of On Snow Training Periods.

- The structure of dryland training and recovery.
- Tradition and experience.

”This is the way things have been done for years and this is the way that they are continued to be done. I don’t have a lot of say in it like I said. I am not consulted.”

- Psycho-social variables

1. The time of year and the level of motivation.
2. Variety from year-to-year.

”I think that when you have racers that have been on the team for ten years that it is not good when it is the same thing, the same rythm, each year. I think that if you want to bring something new into the team, a new spirit, that you have to change the program a little bit.”

STRUCTURE OF THE ANNUAL PLAN

THE EMPIRICAL MODEL

The Length of On Snow Training Periods.

- The time of year and the quality of training opportunity.
- The Importance of maximizing the quality and effectiveness of on snow training: the pace-yourself syndrome.

”If we make a marathon out of a training camp, that it lasts three to four weeks long, people will pace themselves naturally. They know how much time we are supposed to be there and they will go, ’Whew! Man, we still have four more days on snow and I am already tired.’ And they will back off on the amount of runs or how much effort they put into each run ...”

STRUCTURE OF THE ANNUAL PLAN

THE EMPIRICAL MODEL

The Distribution of Dryland Training Periods.

- Conjugate sequencing.
- Interference.

1. Physical conditioning and technique training.

"Also different this year is that we were working a lot more in blocks. Last year, especially when autumn came along, we were skiing pretty much every week, you had the feeling. So, you had a very long period of almost a couple of months of being on the snow pretty much all of the time which I think the fitness out of it didn't actually benefit from it. So, we wanted a good block of skiing, a good block where you could really work on their physical training, and then you could really work maximum on both sides."

2. Training for maximum strength and aerobic endurance.

STRUCTURE OF THE ANNUAL PLAN

THE EMPIRICAL MODEL

The Length of Dryland Training Periods.

- Dryland training periods should be long enough to obtain a stable training effect.

  ”The big thing that I think is having blocks of time in between on snow camps that allow for proper cycling and periodization. And, in a lot of cases, we jam in on snow situations close together where the time in between is not realistic. It does not follow a proper cycle. Things get cut short. Things are rushed. And the athletes don’t get the proper amount of time to go through the phases for the proper adaptation. And this is where I feel that there is a problem. That the ski camps need to be separated enough to where the cycles can be done in a proper way... To where the ahtlete can benefit from it the most.”

- Dryland training periods should not be so long that productivity diminishes.
- The distribution of on snow training.

STRUCTURE OF THE ANNUAL PLAN

THE EMPIRICAL MODEL

The Structure of Recovery in the Preparation Period.

- The distribution of on snow training.

"... I am seeing a trend of athletes starting the preparation period burned out. Instead of having them going, 'I am fired up! And I want to be here and I want to work hard.'"

- Competition selection.
- It is difficult but important to rest when catching up.

"For me, it is always important that you think about training hard, racing hard, but also resting hard. To keep these three in balance is very easy when things are going well... When you have good conditions, no injuries, and just good results. Then you don't get nervous taking breaks. But when you are struggling and you lose some days or you get half days, you think that you are behind the ball. Then it is tough to take a break ... In your planning you need to be very careful that you control that. Otherwise, you end up in an injury situation... It can ruin a career."

STRUCTURE OF THE ANNUAL PLAN

THE EMPIRICAL MODEL

The Structure of Equipment Testing in the Preparation Period.

- Minimize interference with technical training.
- The rules of the federation ski pool.
- The equipment manufacturer: Design and distribution schedules.
- Training opportunity.
- The start of the competition period.

STRUCTURE OF THE ANNUAL PLAN

THE EMPIRICAL MODEL

Competition selection.

- The importance of competing at different levels.
  1. The focus level.
  2. The training level.
  3. The experiential level.

- The importance of success: winning at all levels.

"What I feel like is ... Athletes are spending too much time at the experiential level. The level where they are just getting their butts kicked over and over again. And not nearly enough time at their focus or training levels. Both the upward and downward mobility from those levels are cricital to the development of the athlete. You don't want to leave them at a place where they learn to lose for too long."

STRUCTURE OF THE ANNUAL PLAN

THE EMPIRICAL MODEL

Competition selection.

- The distribution of competitions: allow for periods of recovery and training.

  "I don't think the fact that you start in the starting gate and get a time in itself is bad, but when you start counting the number of starts and people who are doing 60 days (races) in the way that I described that you would do a World Cup and spend the majority of the day sitting on your butt, then it is a severe problem."

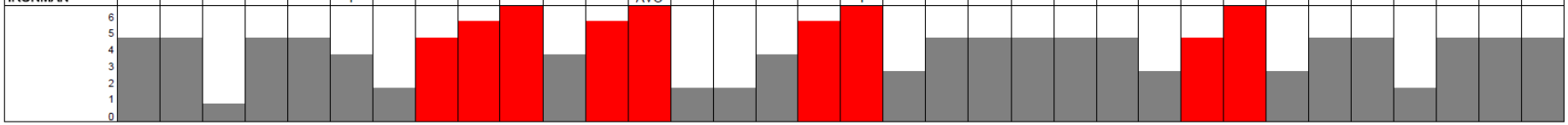
- Constraints:
  1. Staff, travel, and budget.
  2. Responsibilities to sponsors.

STRUCTURE OF THE ANNUAL PLAN

PERIODISERIN
FORBEREDELSES PERIODE 2011 / 2012 - WC HERRER

HOVEDMÅL:	TILTAK:	TESTING:
-Aerob utholdenhet - med koordinativt preg -Stabilitet -Stor trenings mengde -Koordinasjon/imitasjon (Claude, Morten) -Stabilitet -Mobilitet -Vedlikehold styrke	-Mye felles trening. -Tidlig tillvening under vår skitrening -Blokk med store mengder trening-koordinativt preg -Blokk med høy intensitets lang intervaller -Submaks / hypotrofi fokus på styrke -To mindre blokker barmark på vinteren	-Ironman 2 ganger -Isokinetisk testing for baseline / balanse 1 gang -VO2 testing 5 ganger -Redusert test før sesong start

UKE	4-Apr	11-Apr	18-Apr	25-Apr	2-May	9-May	16-May	23-May	30-May	6-Jun	13-Jun	20-Jun	27-Jun	4-Jul	11-Jul	18-Jul	25-Jul	1-Aug	8-Aug	15-Aug	22-Aug	29-Aug	5-Sep	12-Sep	19-Sep	26-Sep	3-Oct	10-Oct	17-Oct	24-Oct	31-Oct	7-Nov	14-Nov	21-Nov
PERIODE	SKI		HVILE	SKI		GRUNNPERIODE 1					GRUNNPERIODE 2			HVILE		GRUNNPERIODE 3				SKI					SPESIFIKK 1				SKI		SPES	SKI		
	TILVENNING			TILVENNING		ALLSIDIG UTHOLDENHET					HIT			XTRAIN		HIT				NEW ZEALAND / CHILE					EKSPLOSIV STYRKE				EUROPA		2	NOVEMBER		
STYRKE	TILVENNING					SUBMAKS STYRKE					VEDLIKEHOLD / SUBMAK			XTRAIN		VEDLIKEHOLD / MAKS									EKSPLOSIV STYRKE				VEDLIKEHOLD / RUTINEPLAN					
UTHOLDENHET	TILVENNING					STOR MENGDE MED KOORD. PREG						HIT BLOKK 1		XTRAIN			HIT BLOKK 2			VEDLIKEHOLD / RUTINEPLAN					SPESIFIKK ANAEROB UTH.				VEDLIKEHOLD / RUTINEPLAN					
KOORDINASJON	TILVENNING					STOR MENGDE / VARIASJON					LAV MENGDE			XTRAIN		HØY INT / KVALITET				VEDLIKEHOLD / RUTINEPLAN					HØY INT / KVALITET				VEDLIKEHOLD / RUTINEPLAN					
TESTING						O2/ISC						VO2						VO2									VO2				VO2/S				
IRONMAN						I							AVC					I																



PLANLEGGINGS RUTINER

- There should be a system for planning within the federation / club which ensures that the planning process occurs regardless of changes in staff. The ”red thread” must go on.
- In addition, there should be a system for planning which ensures that information is provided in a timely manner. For instance, year plans created twice a year, in November and April.

-Marketing: setting fund-raising goals, obtaining sponsors for special projects.

-Economy: planning budgets

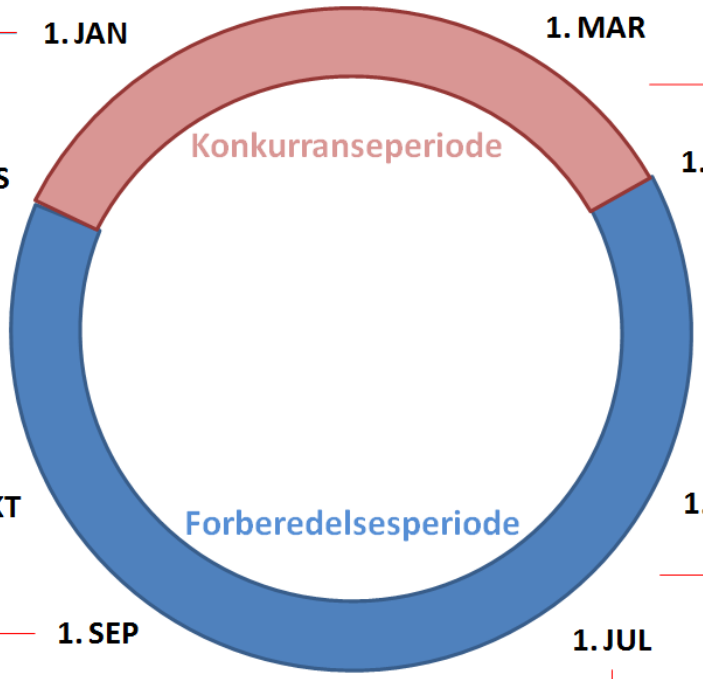
-Sponsors: planning dates to use athletes that do not conflict with training.

-Ski factories: planning testing and development of equipment.

-Team staff: reserving training space, hotels, etc.

-Athletes / staff / family: planning personal time

PLANLEGGINGS RUTINER



1. januar: Barmarkstrener / Sport Science kontrakter slutter

1. januar: 3. utkast planer og budsjetter klare

1. februar: Barmark periodisering klar

15. februar: Barmark planleggingsmøtet med OLT

15. mars: Barmark detalj planer for april klare

1. april: Initiell løper sesong evaluering klar

10. april: Vår evalueringsmøter og lag uttak klar basert på FIS list 11

15. april: Endelige planer og budjsetter klare. Barmark detalj planer for mai/juni klare

1. mai: Skitrener / Hovedtrener kontrakter slutter

1. Juni: Ny planleggings syklus starter for *følgende* sesong

15. juni: Barmark detalj planer for juli / august / september / oktober klare

1. juli: Barmark Rutineplan Høst Samlinger klare

1. september: 1. utkast planer og budsjetter klare

1. oktober: Løper sommer evaluering klar

15. oktober: 2. utkast planer og budsjetter klare. Barmark Rutineplan Konkurranse Periode klare.

1. november: Høst evalueringsmøter med OLT

1. JAN
1. FEB
1. MAR
1. APR
1. MAI
1. JUN
1. JUL
1. AUG
1. SEP
1. OKT
1. NOV
1. DES