

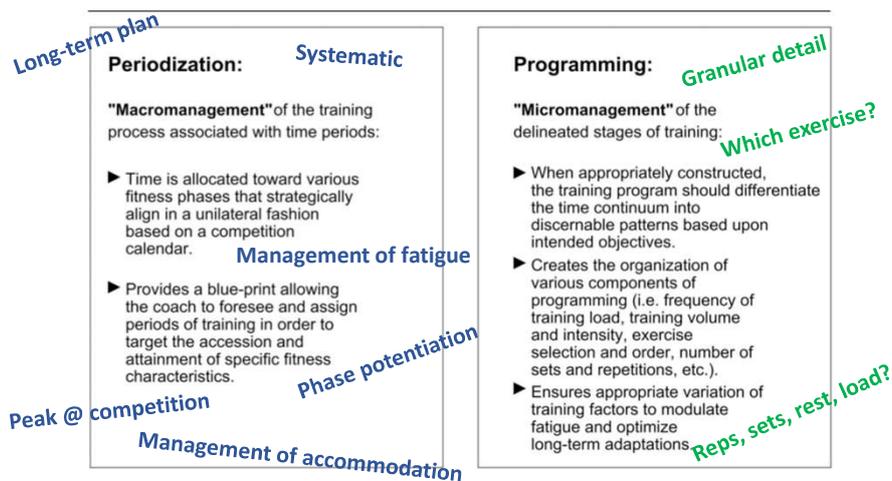
Lecture Objectives

Part 1	What is Periodisation
Part 2	Theories of Recovery-Adaptation
Part 3	Basic, intermediate, and advanced application
Part 4	Non-traditional periodisation
Part 5	Tapering strategies
Part 6	In my opinion...

Part 1

What is Periodisation?

What is Periodisation?

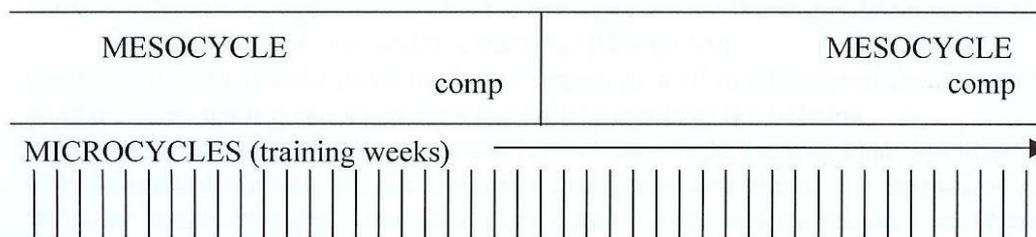


Periodization (macromanagement) vs programming (micromanagement).
 Stone *et al.*, Periodization and Block Periodization (2021) 35:8. JSCR

Periodisation Cycles

jan feb mar apr may june july aug sept oct nov dec

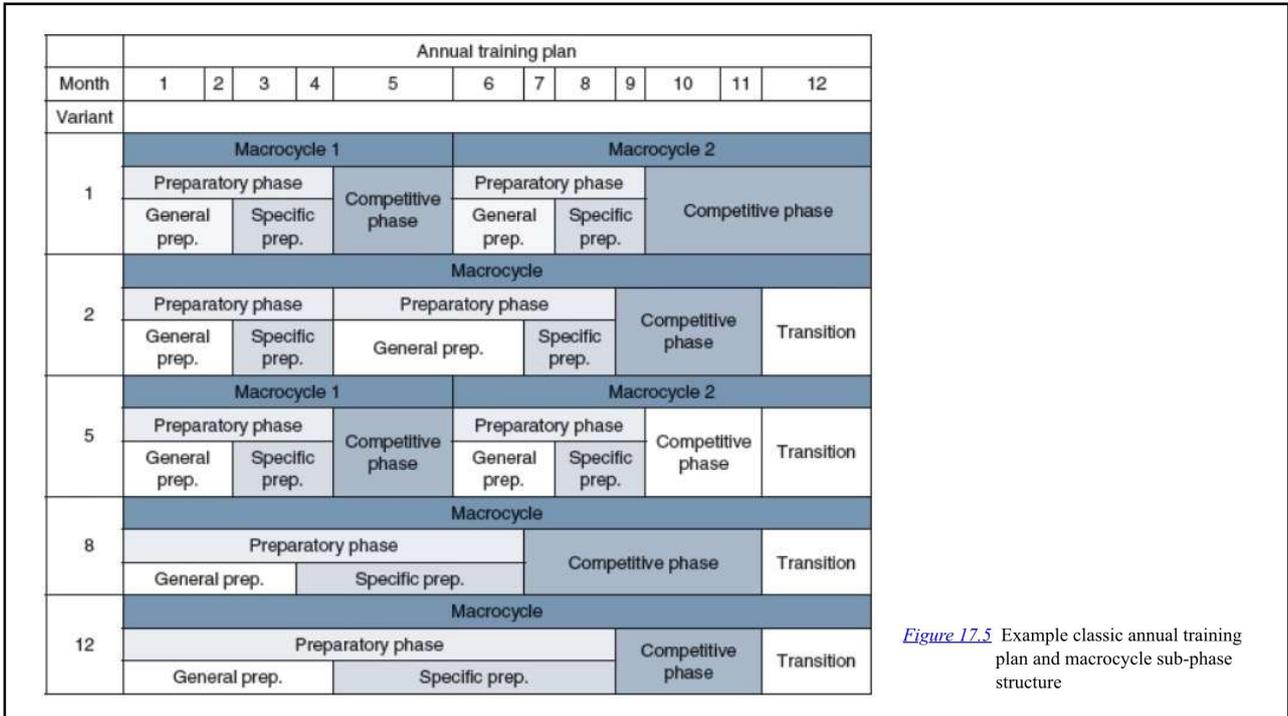
1 year MACROCYCLE



The principle phases and sub-phases of periodisation

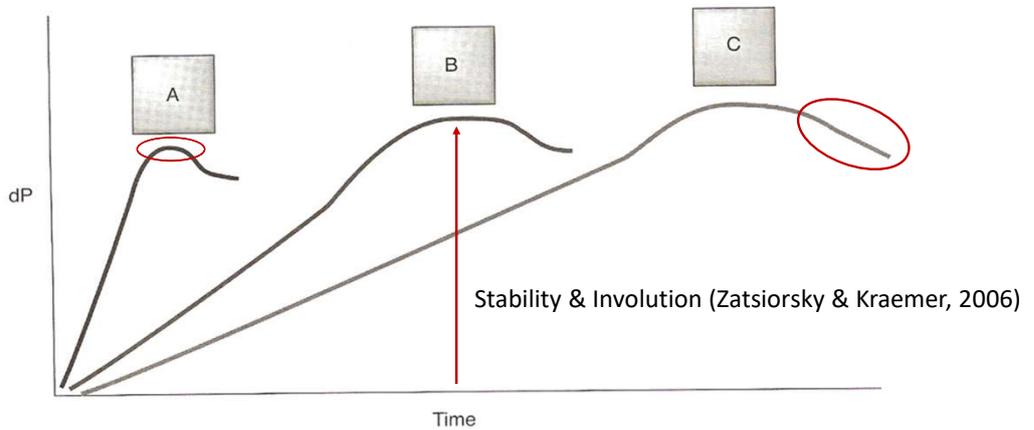
Training Phase	Preparatory Phase		Competitive Phase	Transition Phase
	GPT	SSPT		
Phase Objective	<ul style="list-style-type: none"> • ↑ work (aerobic and anaerobic) capacity • ↑ Neuromuscular functioning • Refine technique 	<ul style="list-style-type: none"> • Develop Sport-specific biomotor ability • Develop sport-specific energy metabolism 	Maintain biomotor conditioning	<ul style="list-style-type: none"> • period of restitution between macrocycles or intense mesocycles • opportunity for active rest

Adapted from Bompa and Haff (2009)



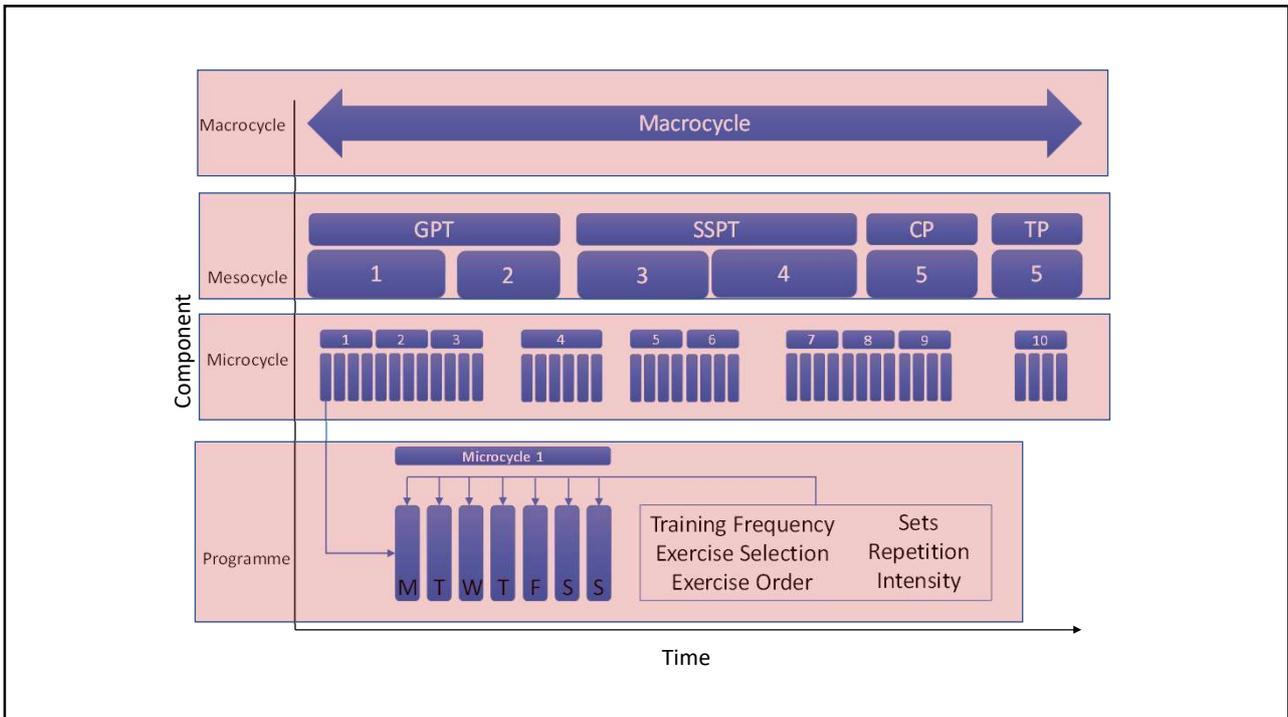
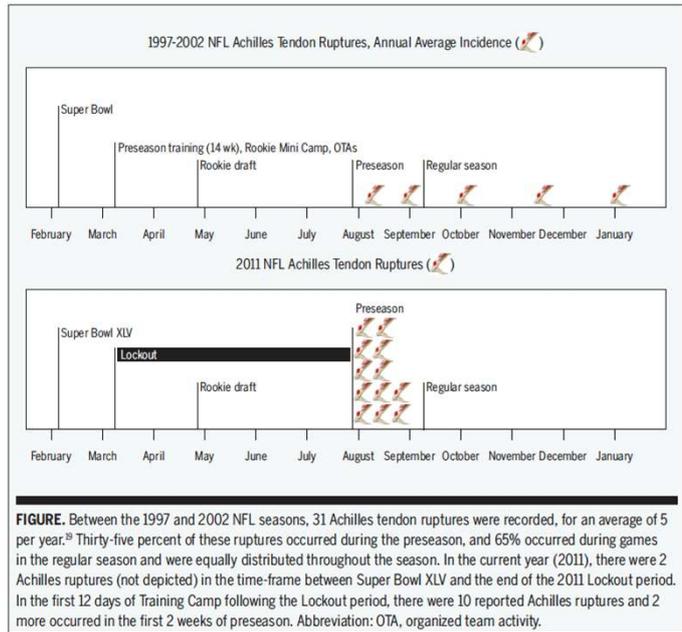
“Soon Ripe, Soon Rotten”

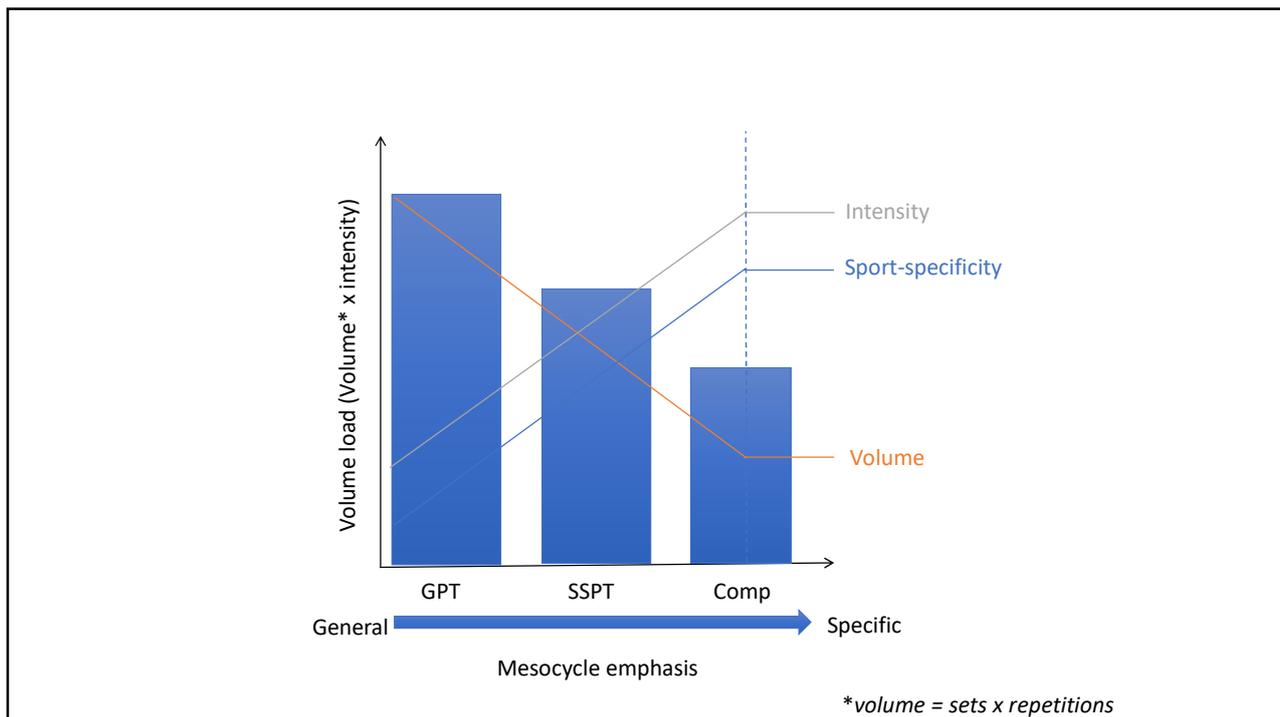
Stone et al., (2007): Average intensity of training is inversely related to...



Too much too soon

Myer et al., (2011).





Theories of Recovery-Adaptation (R-A)

Part 2

R-A: Why is recovery important?



Stress + **Recovery (i.e., fuel, chill, and sleep)** = **gainz!**

R-A

- What is the difference between a professional athlete and an amateur athlete?



Stress is everywhere...

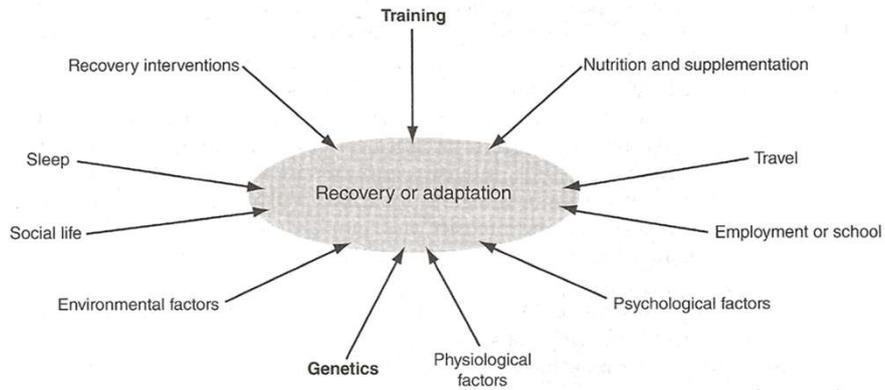


Figure 5.2 Factors that affect recovery and adaptation to training.
 Adapted, by permission, from M.H. Stone, M.E. Stone, and W.A. Sands, 2007, *Principles and practice of resistance training* (Champaign, IL: Human Kinetics), 203.

EFFECT OF PHYSICAL AND ACADEMIC STRESS ON ILLNESS AND INJURY IN DIVISION 1 COLLEGE FOOTBALL PLAYERS

J. BRYAN MANN,^{1,2} KIRK R. BRYANT,³ BRICK JOHNSTONE,³ PATRICK A. IVEY,² AND STEPHEN P. SAYERS¹
 Departments of ¹Physical Therapy, ²Athletic Performance, and ³Health Psychology, University of Missouri, Columbia, Missouri

PRACTICAL APPLICATIONS

Whether an athlete is playing regularly or not, our findings suggest that periods of HAS are a significant factor contributing to injuries during a competitive football season.

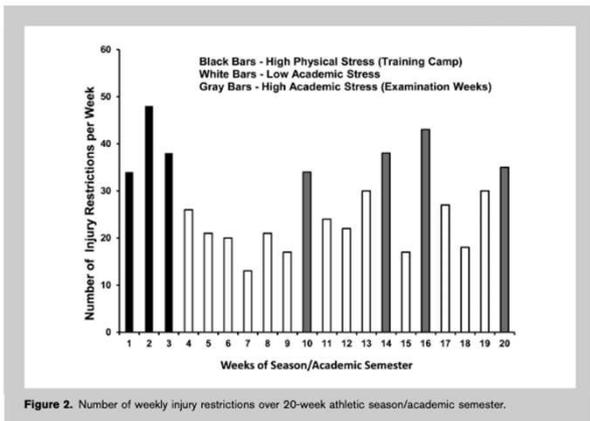


Figure 2. Number of weekly injury restrictions over 20-week athletic season/academic semester.

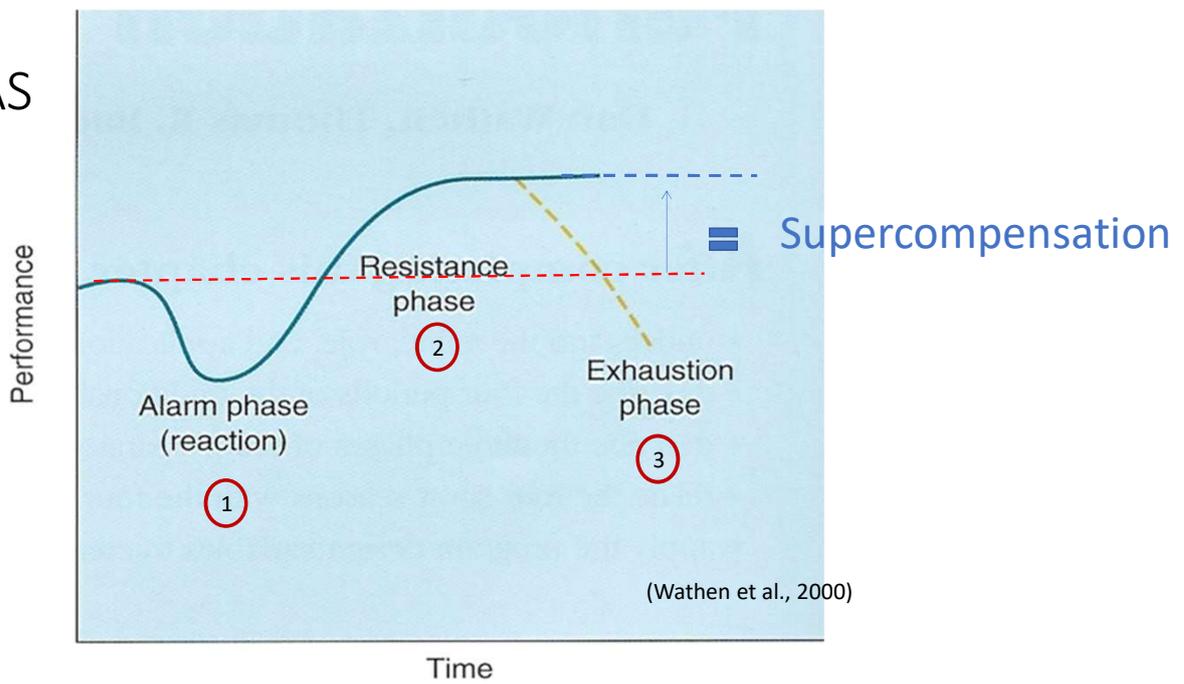
R-A

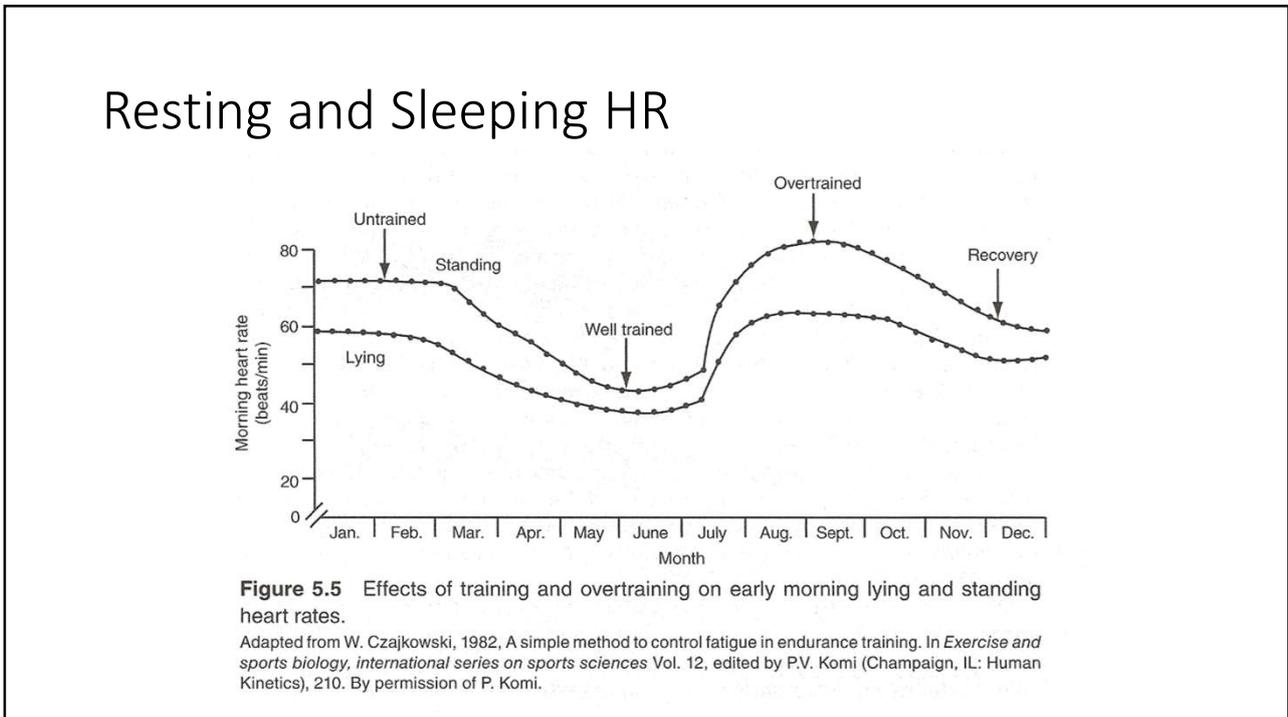
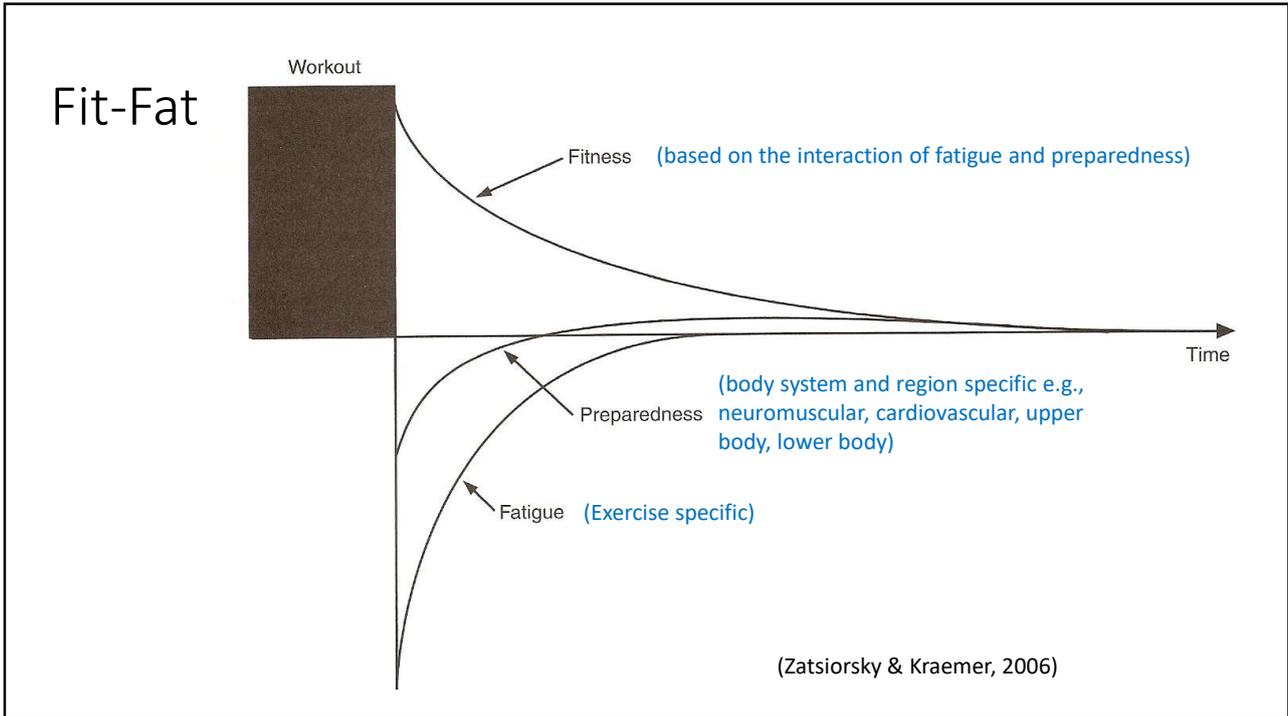
- Mechanisms may explain R-A phenomenon

1. GAS
2. Fit-Fat

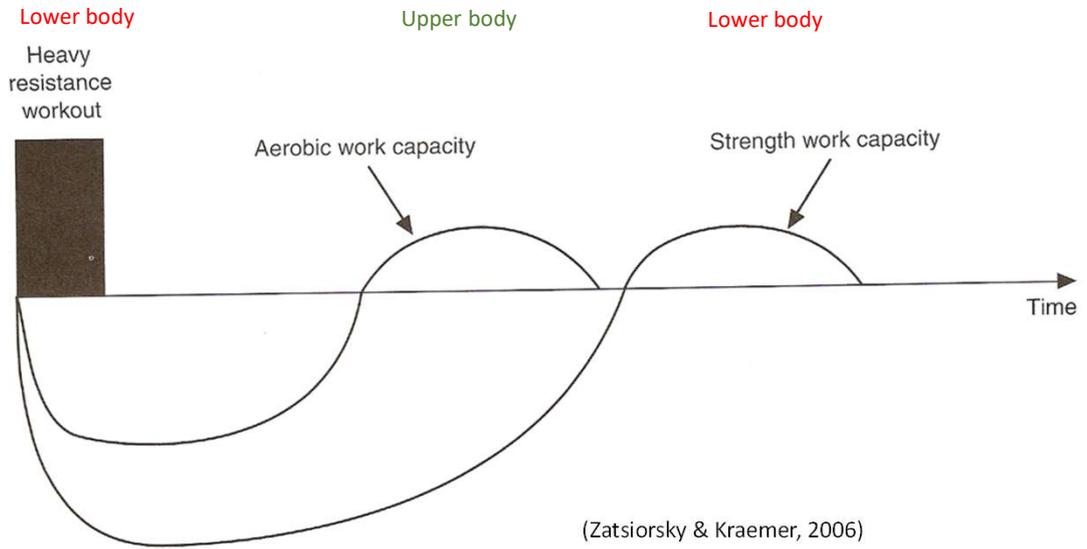


GAS

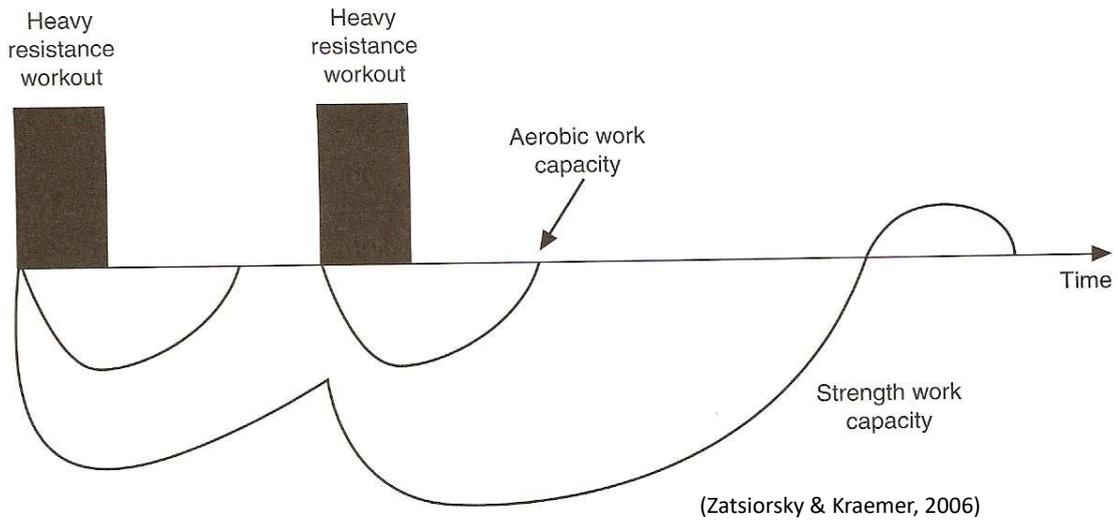


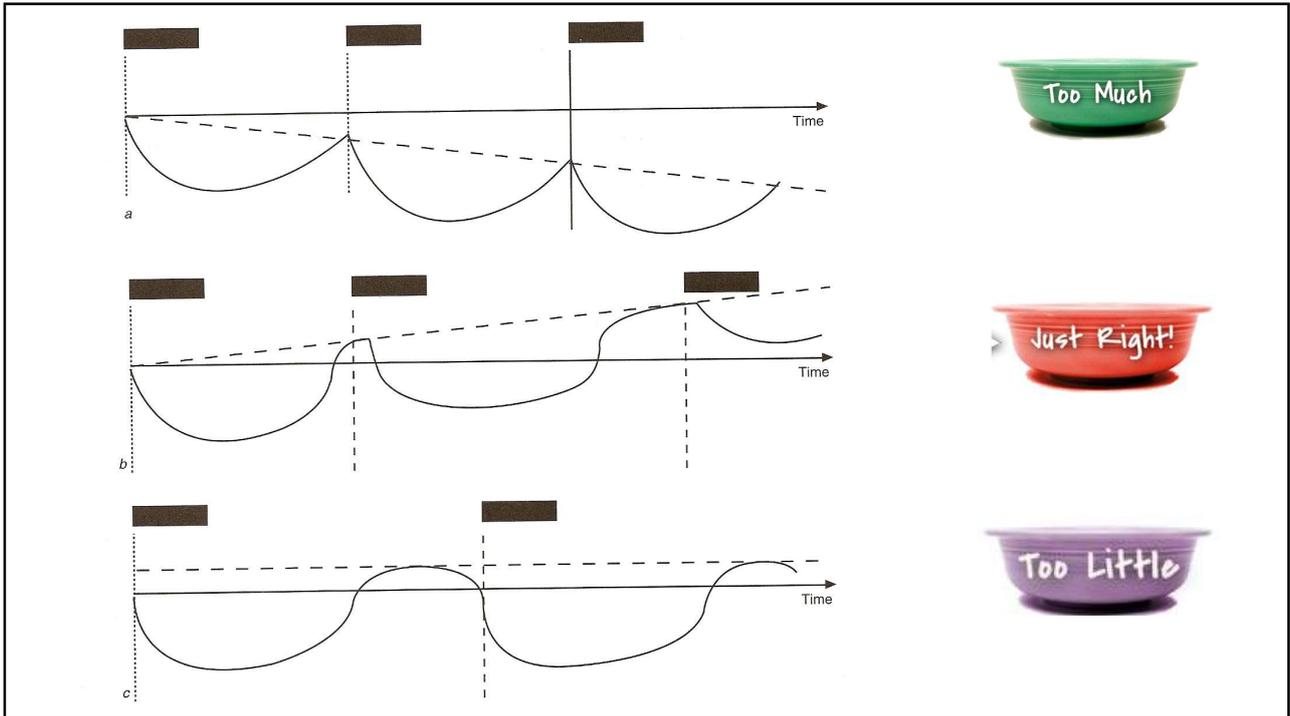


Fatigue is Specific



Superposition of Fatigue





Rest/Recovery Strategies

What strategies are available at each stage?

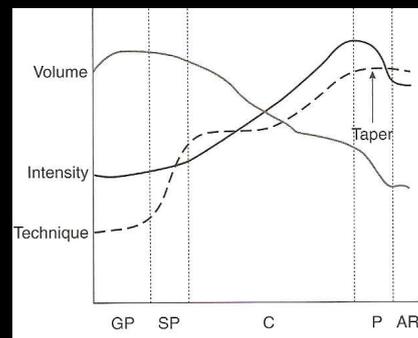
- **Macrocycle**
- **Mesocycle**
- **Microcycle**



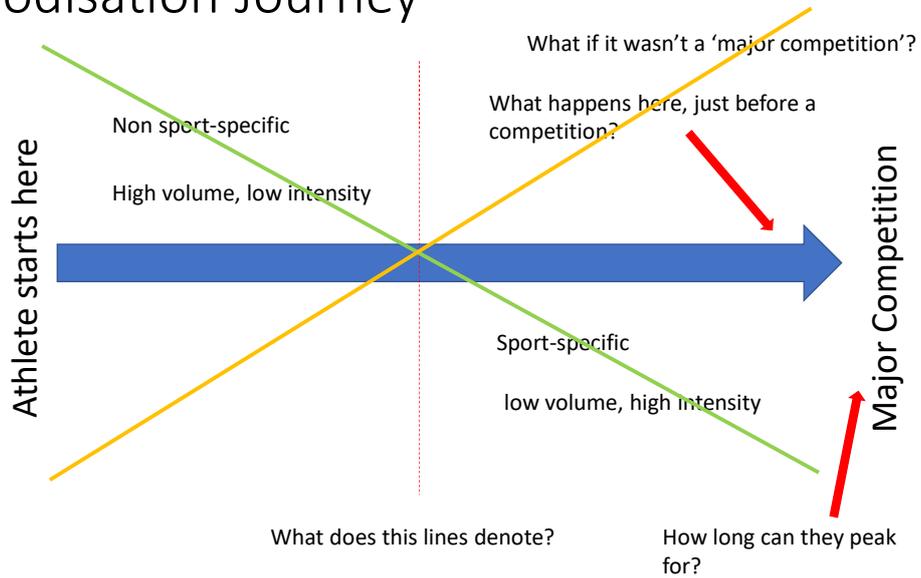
Part 3

Basic, intermediate, and advanced application of periodisation

Basic periodised models



Periodisation Journey



What Would You Do?

- Strength-endurance phase/technique
- Strength phase
- Power phase
- Peaking
- How long should each phase last?



Pick a challenging weight

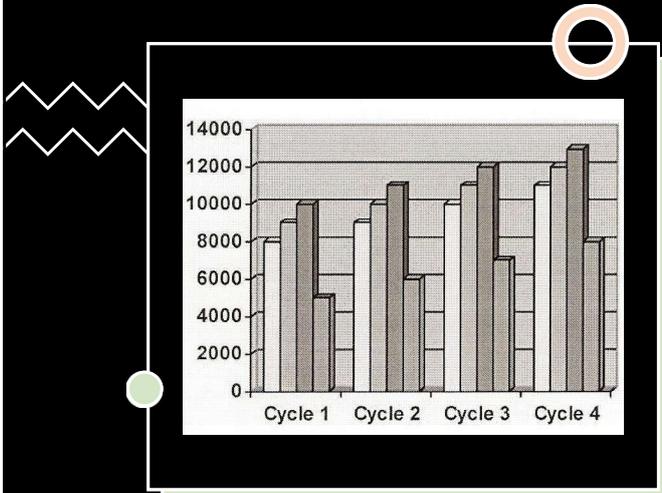
Based on doing this session 2/wk | Must complete each set-rep combo twice

Accumulation: Load remains constant	Intensification: Load increases
5 x 2	5 x 4
5 x 3	5 x 3
5 x 4	5 x 2
5 x 5	5 x 1

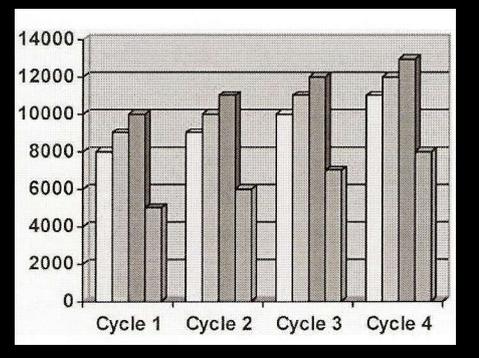
Sets x reps

Two example strength sessions and two example power sessions which can be implemented as part of an periodised programme. (Sets x reps). All unless stated are @ 1- 2 RIR

Strength 1	Strength 2	Power 1	Power 2
Power snatch 5 x 1 (SPD-STR)	Power clean 5 x 1 (STR-SPD)	Deadlift 5 x 1 (@ 93%1RM)	Front squat 5 x 1 (@ 93%1RM)
Box squat wk 1: 5 x 5 Wk 2: 5 x 4 Wk 3: 5 x 3 Wk 4: 5 x 2	Split squat 4 x 4 Nordic 3 x 6	Jump shrug 5 x 3	Power clean 5 x 3
RDL 3 x 6	Bench wk 1: 5 x 5 Wk 2: 5 x 4 Wk 3: 5 x 3 Wk 4: 5 x 2	Box jumps 5 x 3	Prowler push 10 x 10 m
Core (iso or rot) 2-3 x 8-16	BB rows 3 x 6	Hurdle jumps 5 x 3 RDL 3 x 6	MB rotational throws 5 x 3 Nordic 3 x 6



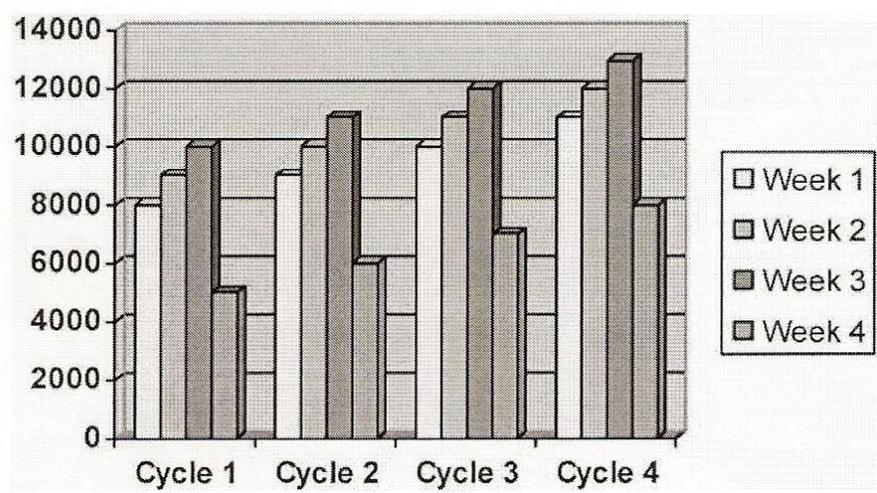
Intermediate strategy



Cycle	Week 1	Week 2	Week 3	Week 4
Cycle 1	8000	9000	10000	5000
Cycle 2	9000	10000	11000	6000
Cycle 3	10000	11000	12000	7000
Cycle 4	11000	12000	13000	8000

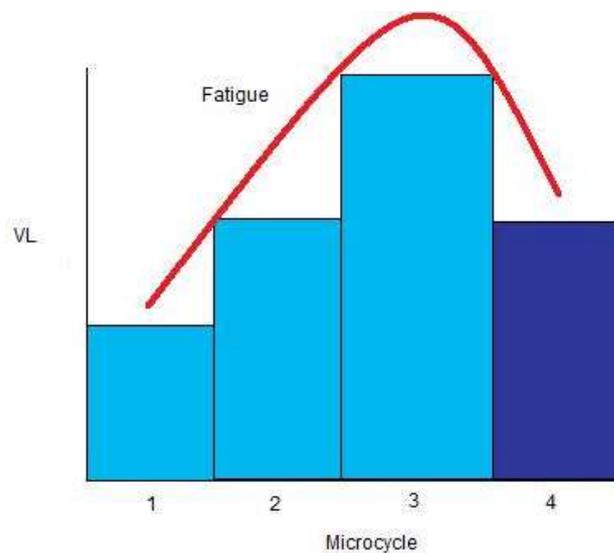


How can this summated cycle be achieved?

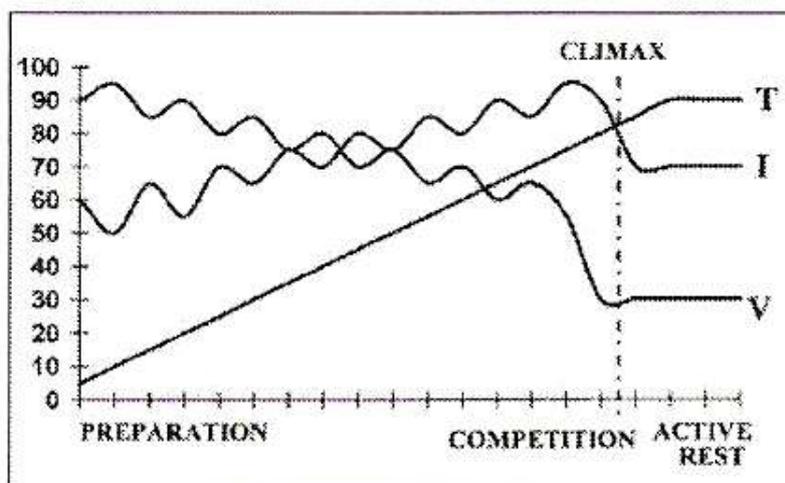


Cycle	Week 1	Week 2	Week 3	Week 4
Cycle 1	8000	9000	10000	5000
Cycle 2	9000	10000	11000	6000
Cycle 3	10000	11000	12000	7000
Cycle 4	11000	12000	13000	8000

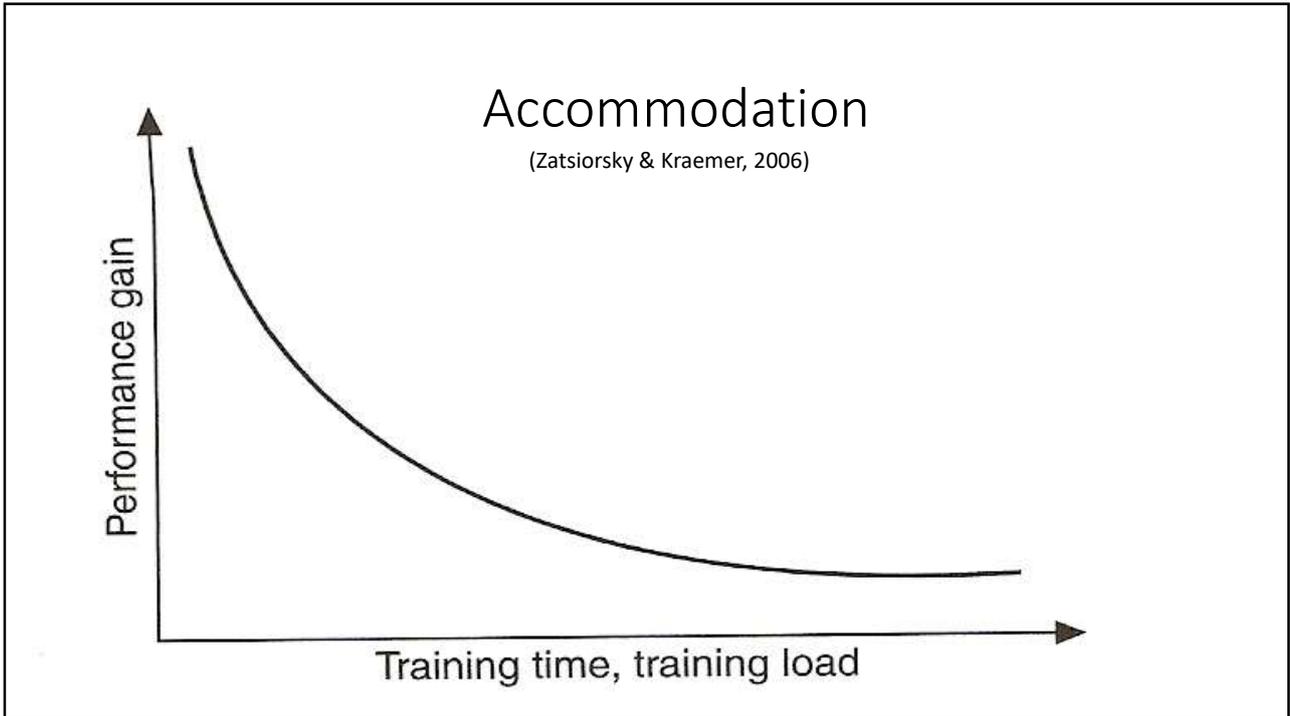
(Plisk & Stone, 2003)



A 3:1 loading paradigm. Adapted from Bompa and Haff (2009) and Stone *et al.*, (2007). VL = volume load.



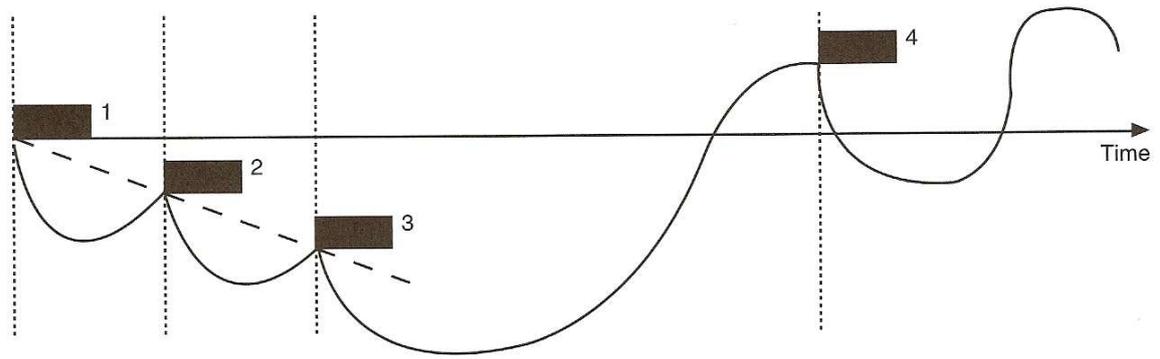
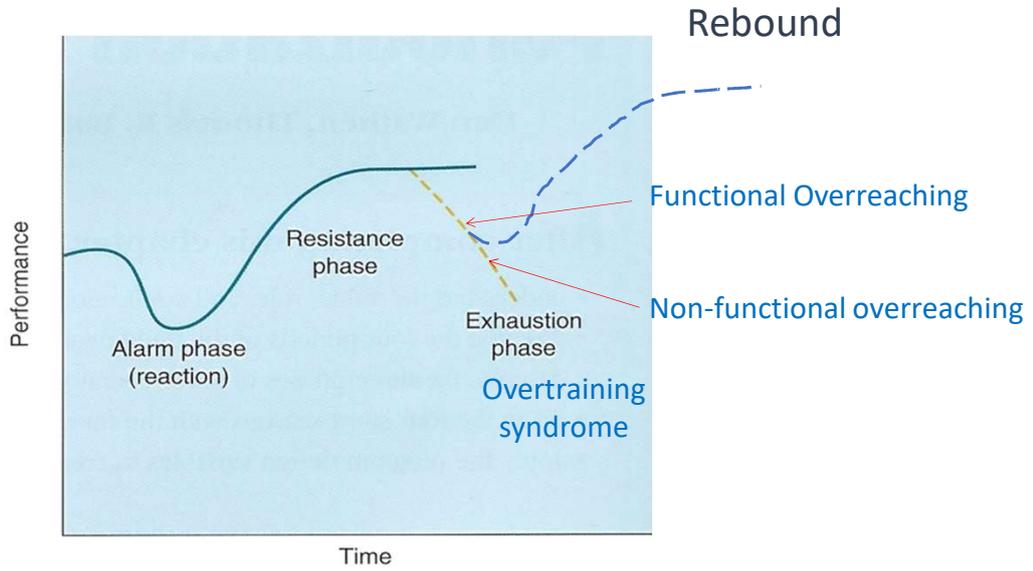
(Plisk & Stone, 2003)



Advanced strategies

The graph titled 'Power and speed' displays several overlapping curves. Six numbered markers (1 through 6) are placed at various points along the curves, likely representing different training strategies or performance metrics. The curves show fluctuations in power and speed over time, with markers 1, 3, and 5 positioned at peaks and markers 2, 4, and 6 positioned at troughs or lower points.

Conjugate System



(Zatsiorsky & Kraemer, 2006)

Part 4

Non-traditional periodisation

Maintaining Peak Performance for 35wks!

- A thankless task!
- For high-intensity intermittent contact sports, an adverse metabolic environment can present. E.g., sustained sprint running
↑cortisol, ↓ TST
- Success somewhat dependent maintaining strength



Also, Prof. Kraemer *et al.*, (2004)

- Showed that both starting and non-starting soccer players ↓ performance over the 11wk competitive season
- ↓ in all players indicates that adaptations independent of total match play, and VL of practices/S&C should be evaluated
- A catabolic environment (↑ C, ↓ T) was initiated in the preseason and not obviated
- This may have determined the metabolic status of the players as they entered the competitive period
- May be exclusive to those that need to get into shape quickly, but highlights need for restoration, particularly as they enter the competitive phase



Example microcycle completed as part of a non-traditional periodisation strategy. Note that a mesocycle may be considered complete following a set number of rotations and athletes can rearrange the order based on competition scheduling.

Day	Monday	Wednesday	Friday
Emphasis and volume load	Pushing strength: 4 x 4 @ 4-6 RM (~85-90% 1RM)	Pulling strength: 4 x 4 @ 4-6 RM (~85-90% 1RM)	Power: 5 x 3 @ variable loads (dependent on the exercise)
Example exercises	Squats, bench press, and over head press	Romanian deadlift, pull-ups and Barbell row	Weightlifting and derivatives, and plyometrics

Strength-endurance sessions may be avoided due the higher associated training volumes



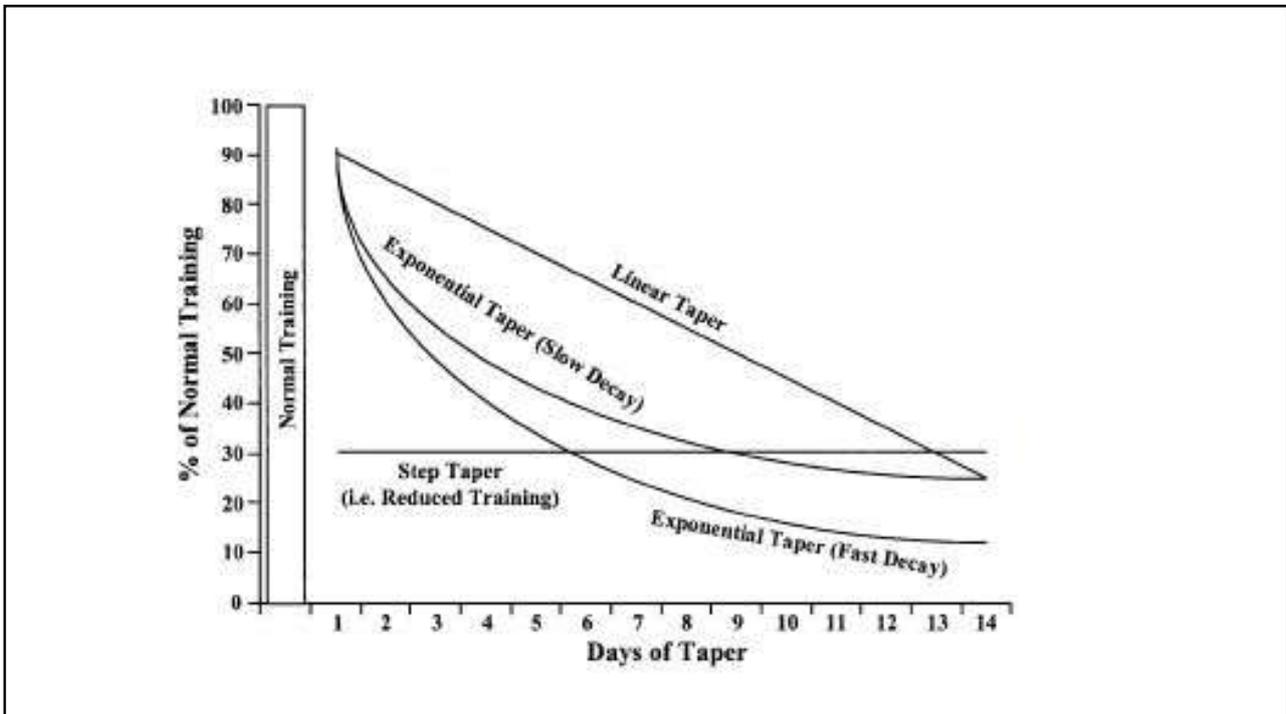
Maintenance Training

- 2/wk
- Combine S&C with sport practice
- Tactical metabolic training



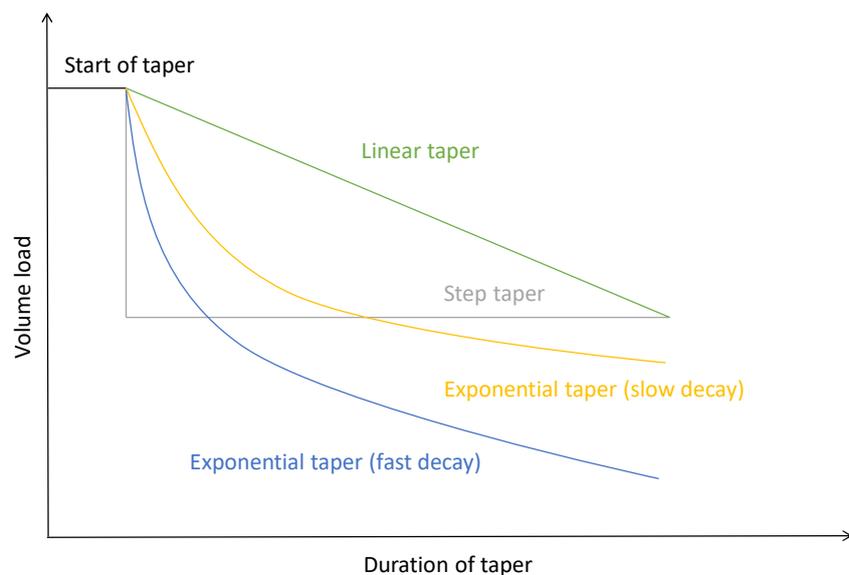
The Taper

Part 5



Summary of performance gains following a taper. Adapted from Wilson and Wilson (2008).

- 5–6% ↑ in criterion competition performance gains.
- Up to 20% ↑ in neuromuscular function (i.e., STR and power).
- 10–25% ↑ in CSA of muscle tissue.
- 1–9% ↑ in $\dot{V}O_2\text{max}$ (this is likely a consequence of hypervolemia, up to a 15% ↑ in RBC production and ↑ oxidative enzyme activity).
- Up to an 8% ↑ in RE.
- Serum TST may ↑ by 5%, with a corresponding 5% ↓ in cortisol.
- Catecholamines may be ↓ by up to 20%.
- ↓ creatine kinase concentrations (suggestive of ↓ muscle damage following a workout).
- A 10% ↑ anti-inflammatory immune cells, with a concomitant ↓ in inflammatory cytokines.
- ↑ muscle glycogen stores (17–34%; proportional to ↓ in VL) especially following CHO loading.
- ↓ RPE, depression, anger, and anxiety and ↑ vigour.
- ↓ sleep disturbances.



Schematic representation of the 3 principle tapering strategies (adapted from Mujika and Padilla, 2003)

Variable	Effect size	95% CI	P
↓ in volume			
≤20%	-0.02	-0.32, 0.27	0.88
21-40%	0.27	0.04, 0.49	0.02
41-60%	0.72	0.036, 1.09	0.0001
≥60%	0.27	-0.03, 0.057	0.07
↓ in intensity			
Yes	-0.02	-0.037, 0.33	0.91
No	0.33	0.19, 0.47	0.0001
↓ in frequency			
Yes	0.24	-0.03, 0.52	0.08
No	0.35	0.18, 0.51	0.0001
Duration of taper			
≤ 7 d	0.17	-0.05, 0.38	0.14
8-14 d	0.59	0.26, 0.92	0.0005
15-21 d	0.28	-0.02, 0.59	0.07
≥ 22	0.31	0.14, 0.75	0.18
Pattern of taper			
Step	0.42	-0.11, 0.95	0.12
Progressive	0.30	0.16, 0.45	0.0001

Data from Bosquet *et al.*, (2007)

Magnitude of improvement:

- Trivial <0.20
- Small 0.20-0.49
- Moderate 0.50-0.79
- Large ≥0.80

Confidence intervals (CI):

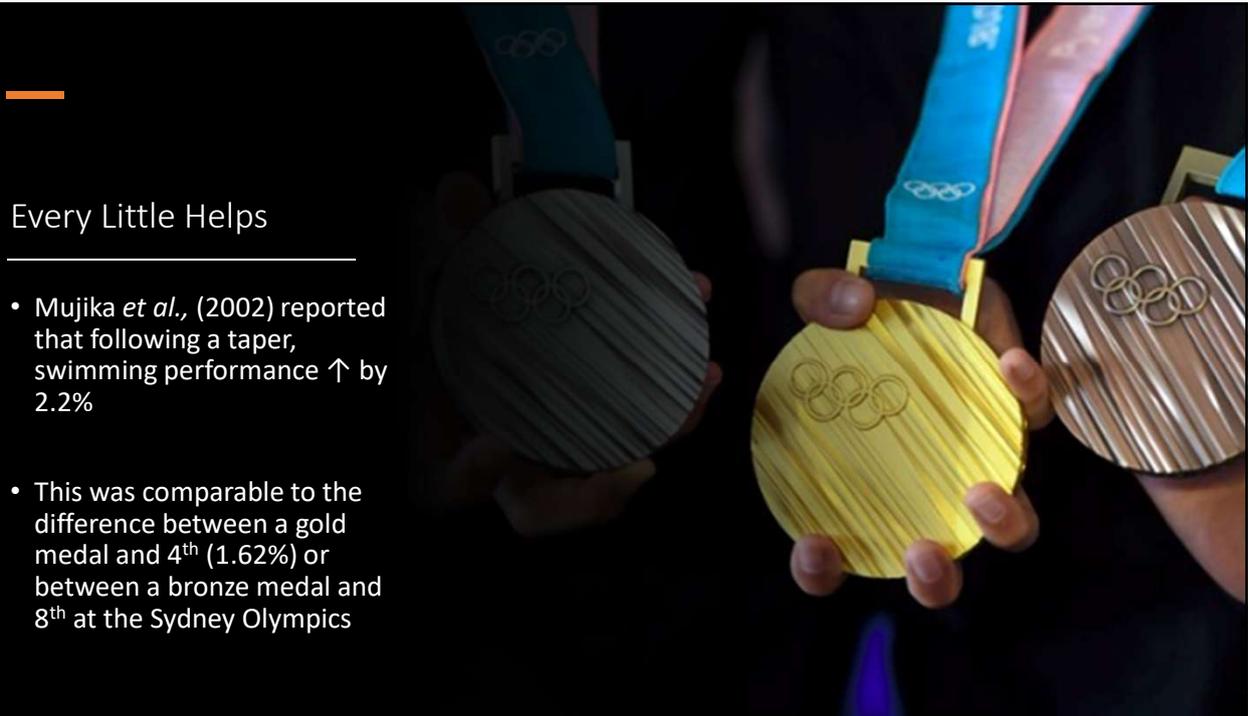
Suggest the best and worse case scenarios if applying data to your athletes

To maintain $\dot{V}O_2\text{max}$ in general populations:

- Exercise frequency can be reduced to 2 sessions per week, as long as exercise volume and intensity are maintained; or:
- Exercise volume can be reduced by 66% (as little as 13 minutes per session), as long as exercise frequency and intensity are maintained.
- Exercise intensity must be maintained as high as reasonably possible (at least as high as the individual's typical training intensity).

To maintain 1RM strength in general populations:

- Exercise frequency can be reduced to 1 session per week.
- Exercise volume can be reduced to 1 set per exercise.
- We conservatively recommend an exercise intensity that results in maximal effort during the final repetition of each set (or maintaining the exercise load at least as high as the individual's typical training level).



Every Little Helps

- Mujika *et al.*, (2002) reported that following a taper, swimming performance \uparrow by 2.2%
- This was comparable to the difference between a gold medal and 4th (1.62%) or between a bronze medal and 8th at the Sydney Olympics



In closing...



Part. 6: In my opinion

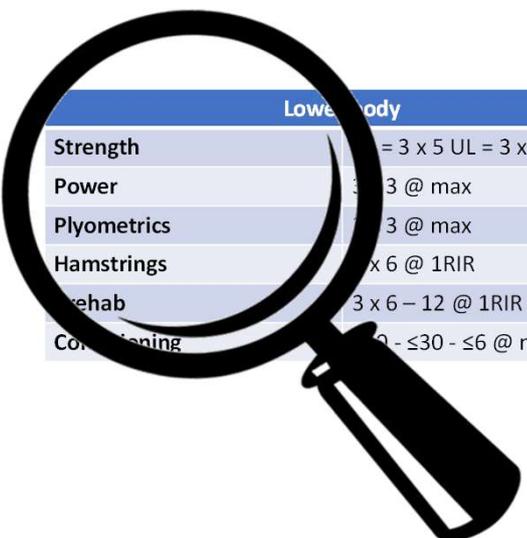


Non-traditional Periodisation

Upper-lower split

Or full body if only training 2/wk

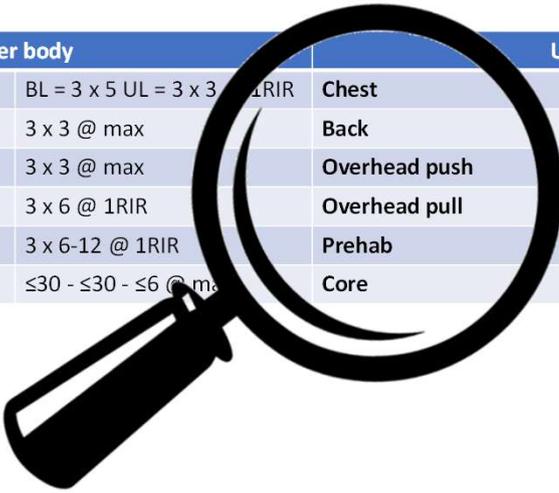
4 – 6-week blocks



	Lower body	Upper body
Strength	BL = 3 x 5 UL = 3 x 3 @ 1RIR	Chest 3 x 3 - 6 @ 1RIR
Power	3 x 3 @ max	Back 3 x 6 @ 1RIR
Plyometrics	3 x 3 @ max	Overhead push 3 x 6 @ 1RIR
Hamstrings	3 x 6 @ 1RIR	Overhead pull 3 x 6 @ 1RIR
Prehab	3 x 6 - 12 @ 1RIR	Prehab 3 x 6 - 12 @ 1RIR
Conditioning	≤30 - ≤30 - ≤6 @ max	Core 3 x 6 - 12

Lower body		
Strength	BL = 3 x 5 UL = 3 x 3 @ 1RIR	Goblet SQ → SPSQ → BoxSQ → RFESS → TBDL → FrSQ → BkSQ → DL → OHS
Power	3 x 3 @ max <i>If just before or after sports practice do ISO?</i>	Long jump → Box jump → Push press → SPJK → BB jump → OLY
Plyometrics	3 x 3 @ max <i>If just before or after sports practice focus on stability or ISO ankle?</i>	Snap downs → pogos → hurdles → DJ → SL hurdles → SL DJ → chaos
Hamstrings	3 x 6 @ 1RIR <i>Done after sports practice?</i>	SLRDL → RDL → Nordics → Bridge switches → Tantrums
Prehab	3 x 6 - 12 @ 1RIR	Monster walks → bridges → SL BoxSQ → Hip flexor → calf → adductors
Conditioning	≤30 - ≤30 - ≤6 @ max <i>Done during sports practice?</i>	Bike → rower → battle ropes → sleds

Lower body		Upper body	
Strength	BL = 3 x 5 UL = 3 x 3 @ 1RIR	Chest	3 x 6 @ 1RIR
Power	3 x 3 @ max	Back	3 x 6 @ 1RIR
Plyometrics	3 x 3 @ max	Overhead push	3 x 6 @ 1RIR
Hamstrings	3 x 6 @ 1RIR	Overhead pull	3 x 6 @ 1RIR
Prehab	3 x 6-12 @ 1RIR	Prehab	3 x 6-12 @ 1RIR
Conditioning	≤30 - ≤30 - ≤6 @ max	Core	3 x 6



Upper body		
Chest	3 x 3 - 6 @ 1RIR	DB chest press → push up claps → BP → TRX push-ups
Back	3 x 6 @ 1RIR	BOR → DB SA row → reverse fly → TRX inverted row → seated row
Overhead push	3 x 6 @ 1RIR	Kneeling SA OHP → military press → landmine punch
Overhead pull	3 x 6 @ 1RIR	Pull-ups → chins → DB pullover
Prehab	3 x 6 - 12 @ 1RIR	Face-pulls → 90-90 → X swords → Row, rot and press
Core	3 x 6 - 12	Front and side planks → Cable rotations → BB roll-outs → landmines → med ball throws

Mobility: long then side lunges, hip circles, world's greatest, knee drops, inches. Practice key gym movements. Warm-up sets

No.	Focus	Exercise	VL	wk1			wk2			wk3			wk4		
1	Squat	Split Squat	Sets	1	2	3	1	2	3	1	2	3	1	2	3
			Reps	3	3	3	3	3	3	3	3	3	3	3	5
			Intensity												
2	Power	Split jerk	Sets	1	2	3	1	2	3	1	2	3	1	2	3
			Reps	3	3	3	3	3	3	3	3	3	3	3	3
			Intensity												
3	Plyo	SL DJ	Sets	1	2	3	1	2	3	1	2	3	1	2	3
			Reps	3	3	3	3	3	3	3	3	3	3	3	3
			Intensity												
4	Hams	Nordics	Sets	1	2	3	1	2	3	1	2	3	1	2	3
			Reps	3	3	3	3	3	3	3	3	3	3	3	3
			Intensity												
5	Chest	DB chest press	Sets	1	2	3	1	2	3	1	2	3	1	2	3
			Reps	6	6	6	6	6	6	6	6	6	6	6	6
			Intensity												
6	Back	SA BOR	Sets	1	2	3	1	2	3	1	2	3	1	2	3
			Reps	6	6	6	6	6	6	6	6	6	6	6	6
			Intensity												
7	Overhead	Kneeling SA DB press	Sets	1	2	3	1	2	3	1	2	3	1	2	3
			Reps	6	6	6	6	6	6	6	6	6	6	6	6
			Intensity												
8	Core	Land mines	Sets	1	2	3	1	2	3	1	2	3	1	2	3
			Reps	12	12	12	12	12	12	12	12	12	12	12	12
			Intensity												
9	Prehab 1	SL Squat to box	Sets	1	2	3	1	2	3	1	2	3	1	2	3
			Reps	6	6	6	6	6	6	6	6	6	6	6	6
			Intensity												
10	Prehab 2	Row, rot., press	Sets	1	2	3	1	2	3	1	2	3	1	2	3
			Reps	6	6	6	6	6	6	6	6	6	6	6	6
			Intensity												

https://thefitnessformula.training/resources

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Chapter 15
The Programme

www.TheFitnessFormula.Training/Resources

Key: DB = dumbbell; BB = barbell; ES = each side

Focus	Ex. No.	Exercise	Session 1			Session 2			Session 3			
Strength	1	Choose one:	sets	reps	load	sets	reps	load	notes	sets	reps	load
		Goblet squat	3	6					Generic notes: 1. Train to 1RIR. 2. Choose exercises at random, based on availability, or follow the order listed, changing every ~ 6 sessions. 3. Add or edit exercises within the relevant focus as needed or based on preference (the listed exercises are just some good examples). 4. Don't be precious with reps. Inevitably, from time to time, you will under or overestimate the weight and end up doing more or less reps than prescribed. This does not matter. It is more important that you work to 1RIR. 5. Always perform warm-up sets, gradually progressing the load, to prepare the body and refine the movement pattern.			
		DB or BB split squat	3 ES	3								
		BB Box Squat	3	6								
		DB rear foot elevated split squat	3 ES	3								
		Hex bar deadlift	3	6								
		Leg press or extension	3	6								
Power	2	Choose one:	sets	reps	load	sets	reps	load	notes	sets	reps	load
		Standing broad jump	3	3	BW							
		Box jumps	3	3	BW							
		Single leg box jumps	3 ES	3	BW							
		BB vertical jumps	3	3								
Plyo	3	Choose one:	sets	reps	load	sets	reps	load	notes	sets	reps	load
		Snap downs	3	3	BW							
		Drop jump	3	3	BW							
		Single leg drop jump	3 ES	3	BW							
		Hurdles	3	3	BW							
		Single leg hurdles	3	3								

If you have the means, progress through these leg exercises in the order shown, switching every 6 - 12 sessions.

'Power' and 'Plyo' are about peak performance, so reducing fatigue with fewer reps and adequate rest is fundamental - this is not conditioning!

If/when you do decide to include Plyos, you could (randomly) rotate through the drills shown, alternatively, you could progress through them as described here or in chapter 8.

Warm-up | Functional Fitness_lower body | Functional Fitness_upper body | **Athletic Fitness_lower body** | Athletic Fitness_upper body | Full-body single set | Stats | +