

A line of triathletes in various colored wetsuits and swim caps stands on a blue mat on a beach, preparing for the swim start. The sun is bright in the sky, and the ocean is visible in the background. Some wetsuits have names and country codes like 'OLIVEIRA BRA', 'MURILU ESP', and 'VALETTI ITA' visible.

**PLANNING STRATEGY
OLYMPIC TRIATHLON - RIO 2016:**

Altitude use during final block

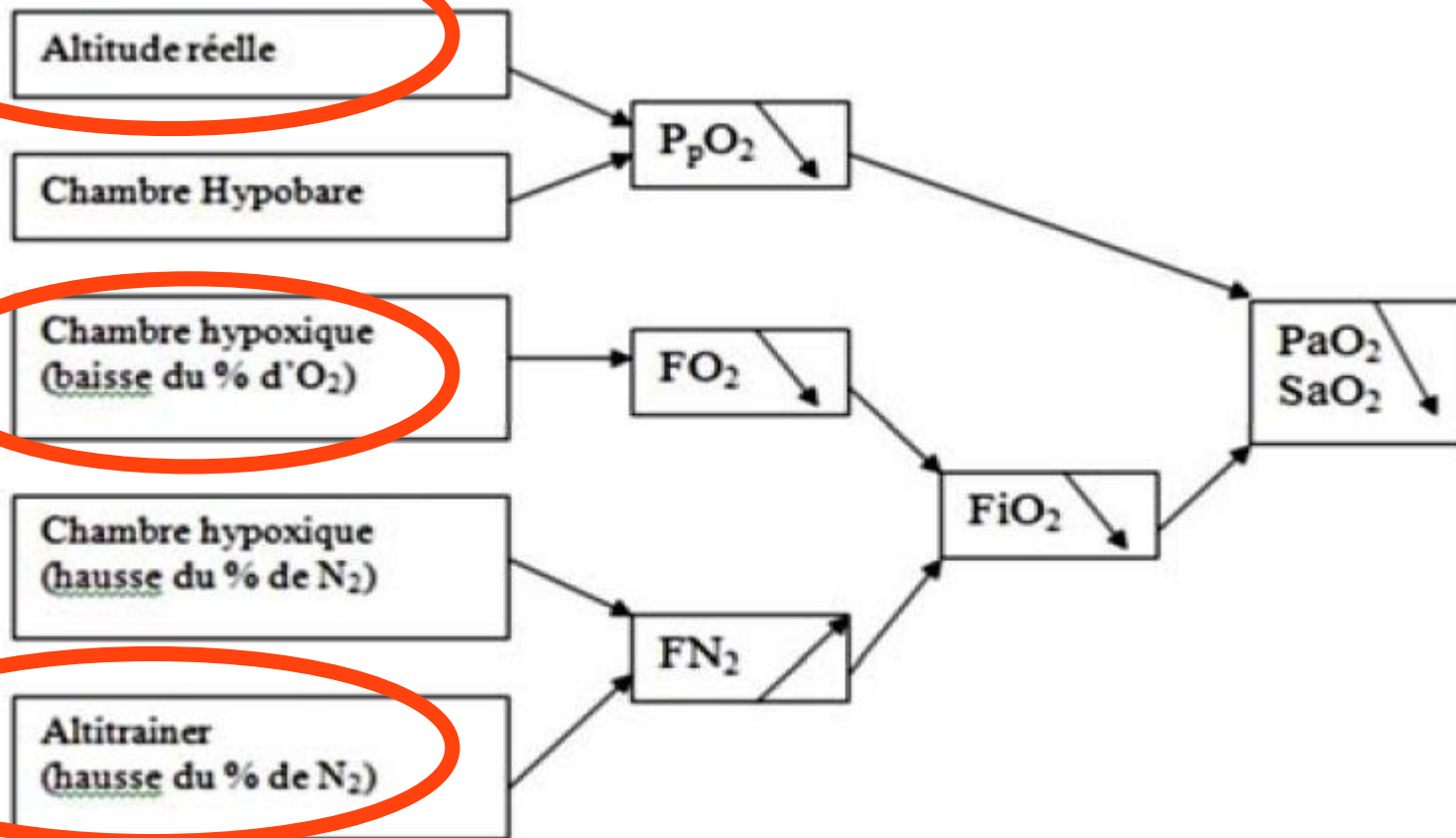
Frédéric HURLIN -AzurPerformance

Altitude training interest for triathletes

- Erythropoietic response to altitude (2-3 DPG)
- ↑ capillaires et nombre de mitochondries,
- ↑ Hemoglobin mass (new-born red cells),
- ↑ Free fatty acides consumption,
- Acido-basic responses.



Hypoxic methods?



Millet et al (2010) Combining hypoxic methods for peak performance. Sports Med

Wilber (2007) Application of altitude/hypoxic training by elite athletes. Med Sci Sports Exerc

Millet et al (2013) Hypoxic training and team sports: a challenge to traditional methods? Br J Sports Med

Available in France?

- Natural altitude (HH) but not enough training equipment over 2000m.
- Hypoxic room (NH), very few. New one in Les Saisies ski resort.



SALLE
HYPOXIQUE

- Altitrainer, expensive.

Available in France?

Individual variation in response to altitude training

- Natural altitude (HH) = NH on P_{iO_2} ,
- HH > NH on ventilation vascular responses,
- HH > NH on vascular responses,
- HH > NH on O_2 uptake (VO_2 max.)

Available in France?

HH > NH

Union between HH - NH for a limited hypoxic stress
+
Appropriately calibrated training

Available in France?

HH + NH = LHTLH

FOR

Better individual hypoxic response
control

+

Accurate training & load counting

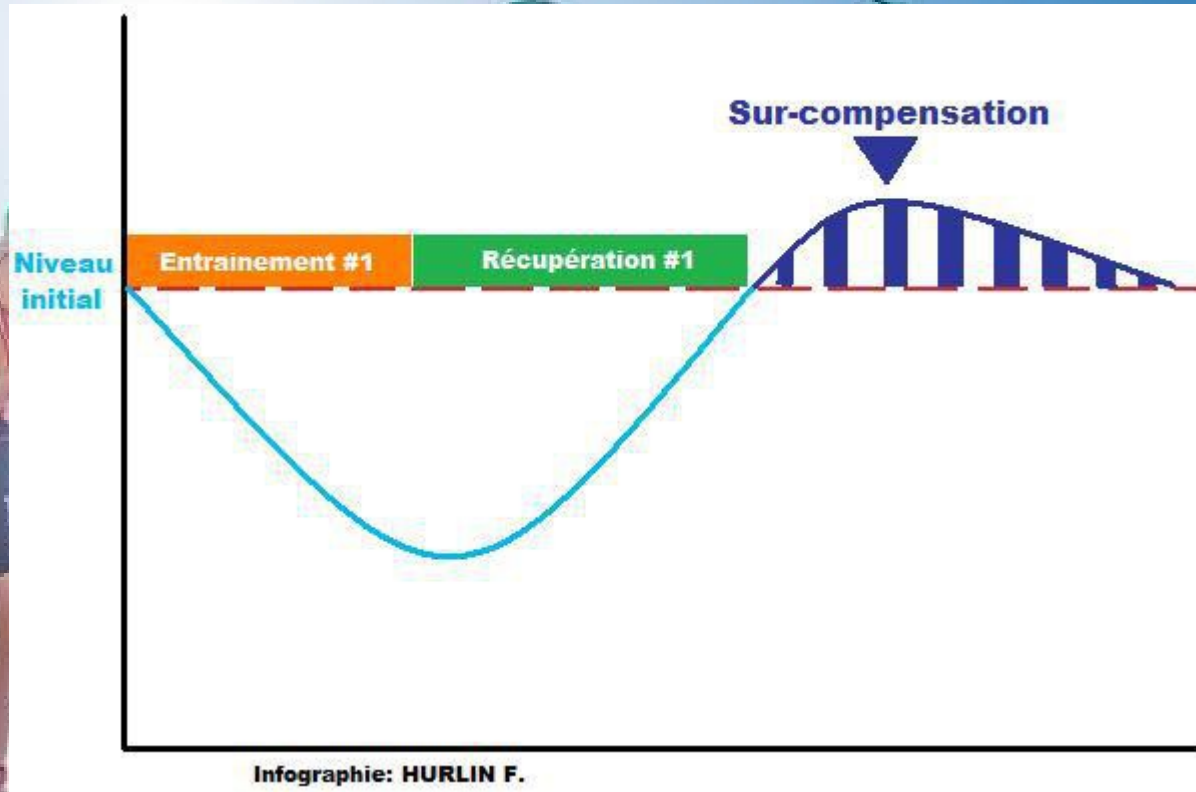
Hypoxic using for Olympic triathlon

- Men race: August, 18 2016 – 11.00
- Women race: August, 20 2016 – 11.00

Particularities:

- Rio UTC-3 = 5 hours – time difference,
- Temperature et hygrometry rate ++,
- Sea swimming + hilly bike course + fast run course.

Periodization to Rio 2016



What we know?

- it works,
- anticipate individual responses if tested during last season.

Planification to Rio 2016

Final Block building:

- Training load growth to race pacing,
- Rio 2016 special needs (heat, cycling needs),
- Block changeover (training – recovery),
- Searching for the optimal peak performance!

Planification to Rio 2016

Note for mountain camp:

- Felt rested, no disease,
- Ferritine dosing 3-wks before the camps for food rebalancing,
- Higher energy and water intake during the camp,
- Good quality sleep,
- Training load monitoring: weight, RPE, HRV, nocturnal oxymetry.

Planification to Rio 2016

ROAD TO RIO 2016												
Low Altitude		█			█			█			█	
High Altitude		█			█			█			█	
		Pre-camps training			Rest and travel	Acclimatisation Climate crisis		Final block			Tapering Travel	Race
Training load	Very high	█			2	█		█			█	
	High	█				█		█				
	Medium	█				█		█				
	Low	█				█		█				
Intensity	<SV1	█			2	█		█			█	
	SV1>n>SV2	█				█		█				
	>SV2	█				█		█				
	Fitness tng	Strength	Technical Prophylaxis	Prophylaxis		Technical Prophylaxis		Strength		Technical Prophylaxis		
Days		7	7	7	4		4	7	7	7	14	1
Date		June, 13 to 19	June, 20 to 26	June, 27 to july, 2nd	July, 3 and 4	July, 5 to 9	July, 10 to 12	July, 14 to 20	July, 21 to 27	July, 28 to August, 3rd		August, 18 and 20

←→
1 preparatory block

←→
4 training camps weeks

←→
Tapering

Planification to Rio 2016

- **Aerobic block D-23 to D-3:** low intensity training – great training volume.
- **Recovery D-2 to D-1** and travel to mountain camp.
- **Acclimatisation D+1 to D+4:** only low intensity and technical exercises.
- **Acclimatation D+4 to D+7:** growth of the training volume, FTP as maximal pace, fitness training (strength),
- **Climate crisis D+7 to D+9:** altitude first adaptation exhaustion so RECOVERY!
- **Chronical hypoxic adaptation D+9 to D21:** high altitude <FTP / low altitude HIIT and race pace.

Planification to Rio 2016

Come-back to sea level:

- **D+2 to D+4:** 1st peak. Preparatory race.
- **D+5 et D+12:** tiredness and recovery after 2 to 4-wks in altitude.
- **D+12 to D+21:** long duration peak with cardiovascular and muscular adaptations.

Conclusion

Mountain camp's benefits:

- O² uptake optimization,
- Energy performance optimization,
- Higher local capillarization,
- Energy substrate choice,
- Weight loss (if needed),
- Quiet place for a final training block.

Conclusion

- Undeniable hypoxic benefits if tested with each athlete (good vs bad responses),
- Upstream training strategy to integrate altitude,
- Necessary physiological monitoring.

More information on www.azurperformance.fr

- Training mountain camp coaching.
- Training load monitoring during altitude training session.
- Hypoxic room training.