

Injury Free Running - To HIIT or not to HIIT?

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Running injuries. A review of the epidemiological literature.

- Running is one of the most popular leisure sports activities
- Incidence rate for running injuries varies between 37% - 56% (2.5 to 12.1 injuries per 1000 hours of running)
- Most running injuries are lower extremity injuries
- 50 to 75% of all running injuries appear to be *overuse* injuries → the constant repetition of the same movement
- 20 to 70% of all injuries lead to medical consultation/treatment and 5% result in absence from work
- Running injuries lead to a reduction of training or training cessation in about 30 to 90% of all injuries
- Aetiological factors: previous injury, lack of running experience, running to compete and excessive weekly running distance.

Sports Med. 1992 Nov;14(5):320-35.

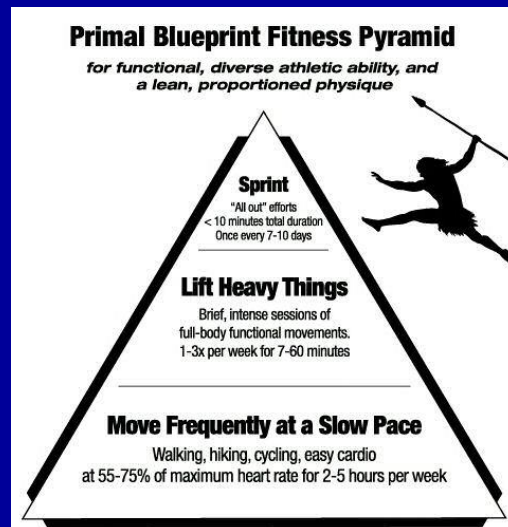


The prevention of sports injuries

- Focus on changes of behaviour by health education!
- Health education should primarily focus on:
 - the early recognition of symptoms of overuse
 - the importance of complete rehabilitation
 - the provision of (evidence-based) training guidelines.

Sports Med. 1992 Nov;14(5):320-35.

“Klassieke” blauwdruk voor Trainingsrichtlijnen



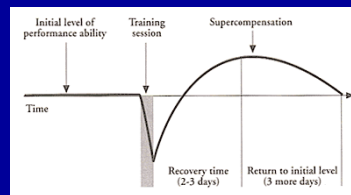
De 7-meest gemaakte hardlopfouten

- Niet eten na een training
- Te snel starten tijdens een wedstrijd
- Iedere keer weer dezelfde training doen (iedere training hetzelfde rondje op hetzelfde tempo)
- Niet stretchen (geen adequate W-up / cooling down)
- Te weinig slapen/rusten
- Te snel te veel lopen!!!

Biologische Wetmatigheden Training (richtlijnen)

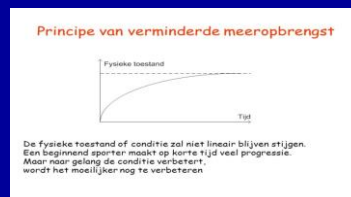
Drie belangrijkste:

- Overload
- Specificiteit
- Reversibiliteit



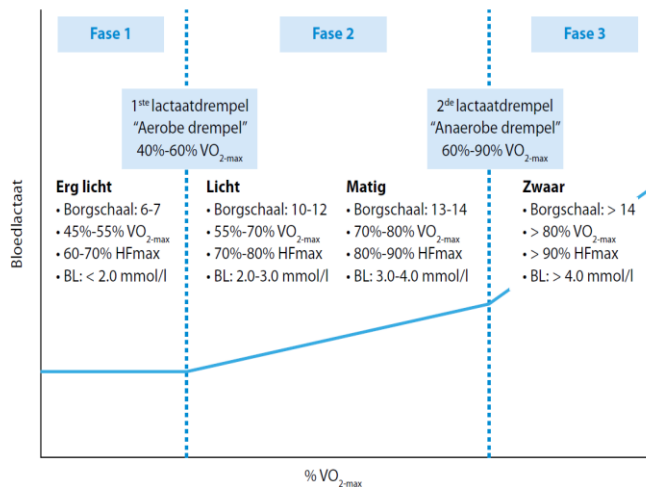
Drie afgeleiden:

- Individualiteit
- Optimale belasting
- Verminderde meeropbrengst



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Drie Fasen Model



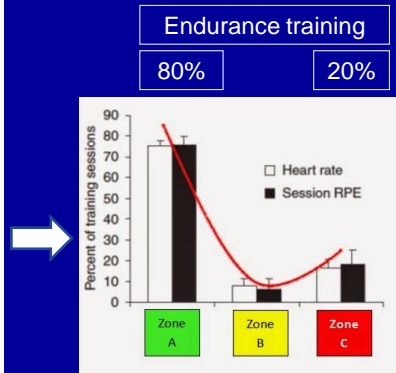
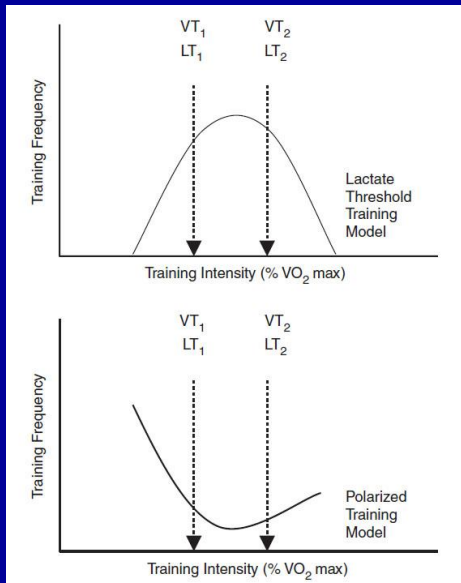
Figuur 2. Driefasenmodel van training gericht op het uithoudingsvermogen volgens Skinner en McLellan (1980).¹² Het inspanningsniveau is gerelateerd aan het bloedlactaat (BL), het percentage van de maximale zuurstofopname (VO_{2max}), het percentage van de maximale hartfrequentie (HF_{max}) en de borgschaal als maat voor de ervaren inspanning.

3-Trainingszones

Intensity Zone	VO_2 (%max)	Heart Rate (%max)	Lactate (mmol·L ⁻¹)	Duration	
1	45-65	55-75	0.8-1.5	1-6 h	Zone 1'
2	66-80	75-85	1.5-2.5	1-3 h	
3	81-87	85-90	2.5-4	50-90 min	Zone 2'
4	88-93	90-95	4-6	30-60 min	Zone 3'
5	94-100	95-100	6-10	15-30 min	

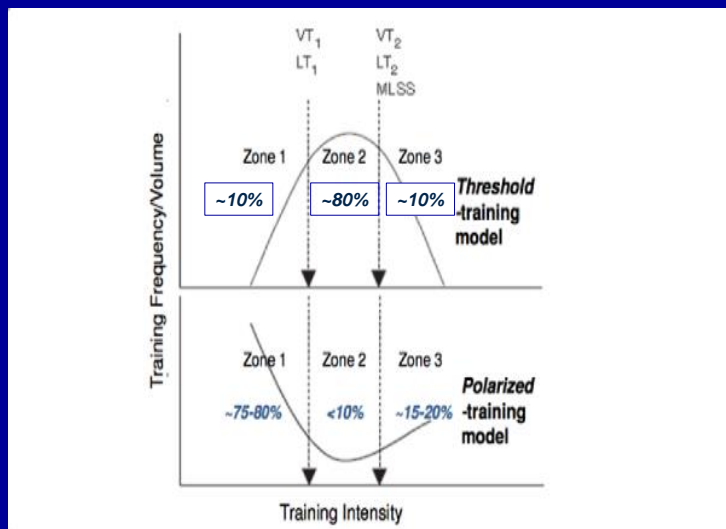
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Trainingsfrequentie / Intensiteit



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“Polarized Trainingsmodel” (80/20 regel)



Spieratrofie / -hypertrofie

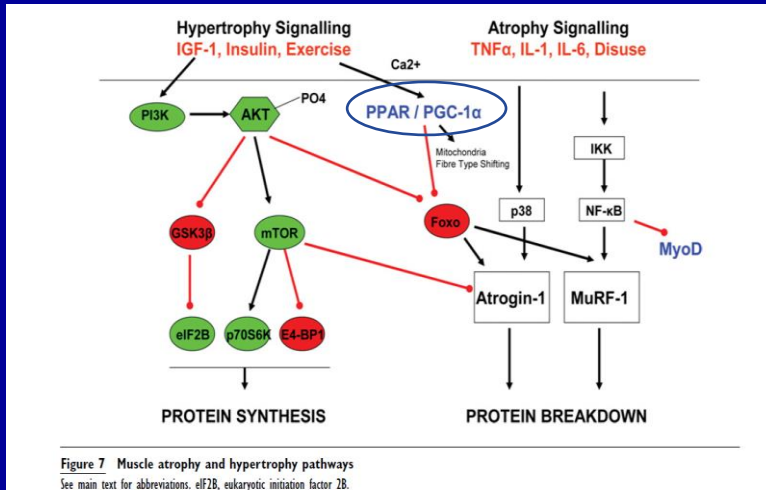
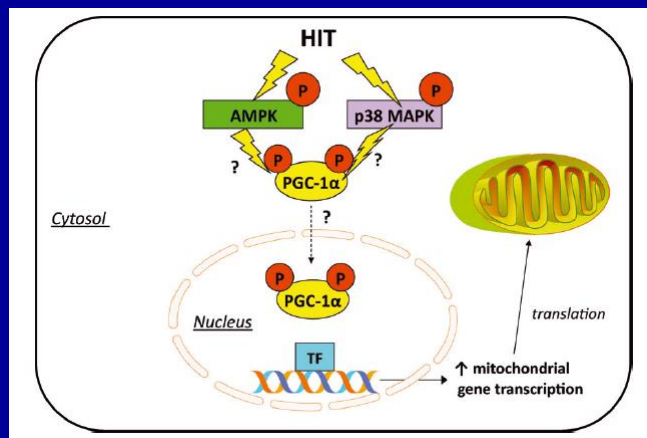


Figure 7 Muscle atrophy and hypertrophy pathways
See main text for abbreviations: eIF2B, eukaryotic initiation factor 2B.

Clinical Science (2009) 117, 251–264

Intracellulaire mechanismen (HIT)

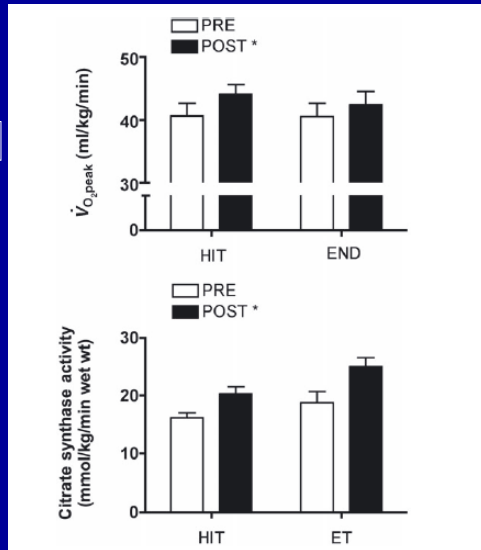


J Physiol 590.5 (2012) pp 1077–1084

Figure 2. Potential intracellular signalling mechanisms involved in HIT-induced mitochondrial biogenesis

Effect na 6 weken HIT of duurtraining

Cardiorespiratoir



Skeletspier

J Physiol 590.5 (2012) pp 1077–1084

Effecten Cardiorespiratoire Fitheid (VO_2 in ml/kg)

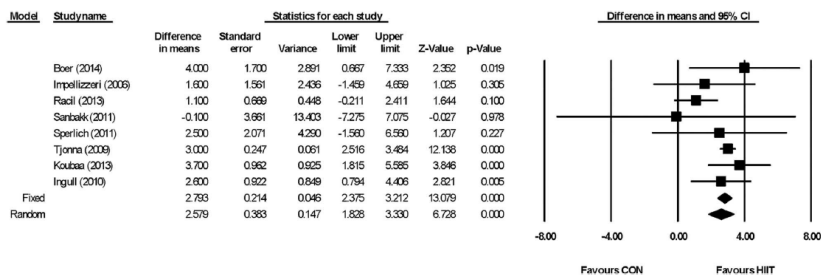


Figure 2 Forest plot of high-intensity interval training (HIIT) effect on cardiorespiratory fitness.

Costigan SA, et al. *Br J Sports Med* 2015;49:1253–1261.

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Take Home Message (HIT the Road)

What are the new findings?

- ▶ High-intensity interval training (HIIT) is superior to moderate-intensity continuous training in improving cardiorespiratory fitness in lifestyle-induced cardiometabolic diseases.
- ▶ HIIT is well-tolerated, safe and improves the quality of life.
- ▶ Central and peripheral adaptations are responsible for the superior benefits of HIIT.



Vragen?

ZO

**DAT WAREN
DE REGELS**

**DAN GAAN WE
NU OVER NAAR
DE REALITEIT**

Loesje

**TRAIN
LIKE A BEAST
EAT
LIKE A HORSE
SLEEP
LIKE A BABY**