

Running Training with HRV

‘Listen to your Heart!’



Marcel van der Kuil

Portland, Quantified Self, Sep 22 2018

Context





AZ QUOTES

AUTHORS TOPICS QUOTE OF THE DAY PICTURE QUOTES TOP QUOTES exa

Medical science has made such tremendous progress that there is hardly a healthy human left.

Aldous Huxley

Medicine, Healthy, Progress

 save quote  report   

About me

- *Married with 3 children.*
- *Computer/Data Scientist*
- *Independent Sports& Health Tech entrepreneur*
- *Background in Telecom and Banking (Risk, Finance and IT), now in Sports & Health Tech*
- *Marathons, triathlons (quarters) and mountainbiking, with a serious schedule, ever since 1990*



QS Checklist: Lessons Learned 1/2

- *'Citizen's science' and 'Patient Expertise' support faster diagnosis and better/accelerated treatments*
- *The responsibility of healthy living primarily lies with you*
- *Exercise is crucial for mental and physical health, but load and loadability should always be carefully observed.*



QS Checklist: Lessons Learned 2/2

- *Physical and mental fitness is a big plus, when recovering from operation or injury*
- *Recovery processes are very similar to training programs*
- *Be a good patient, but not a 'victim'*
- *Put a 100% trust in your caregivers, but make sure to close the gap between them*
- *Build a support network*



Quantified Self



Quantified Self



Running 20/20

Meetups



1

Events



2

Co-creation

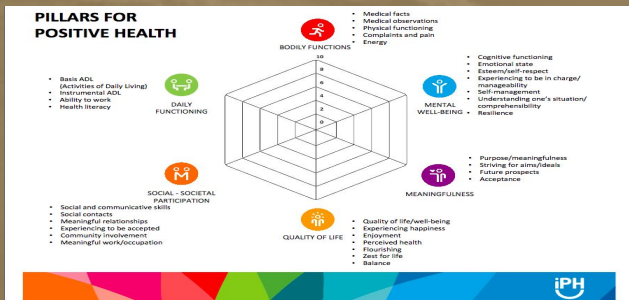
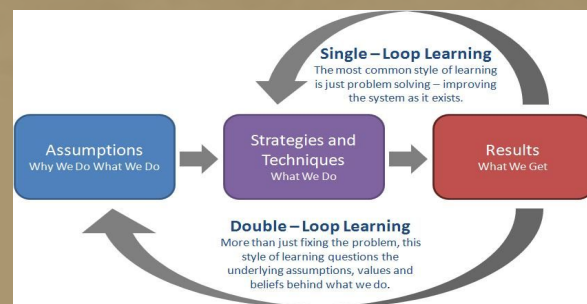
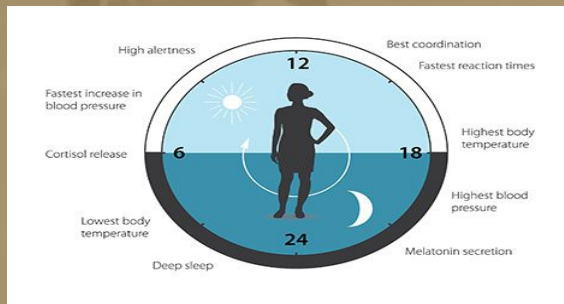
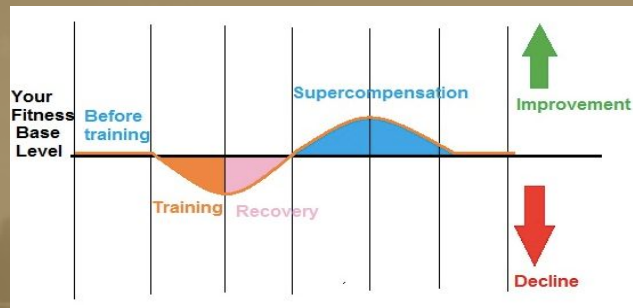


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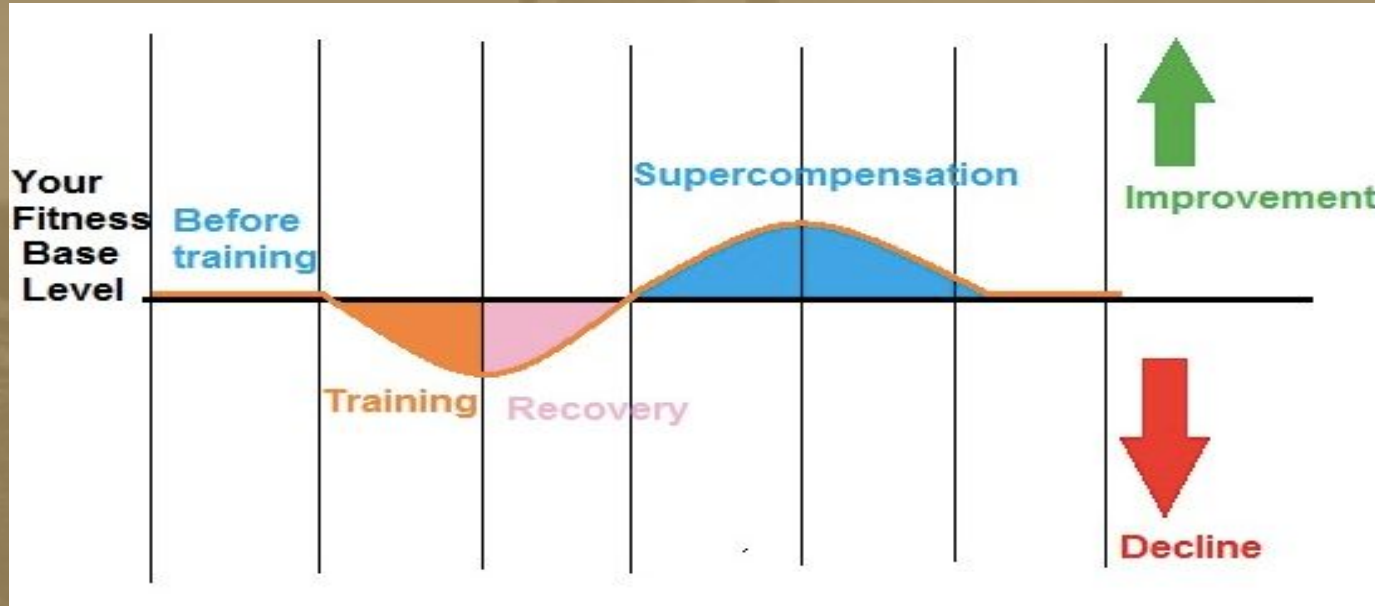
Personal Digital Running / Coaching



Personal Digital Running / Coaching

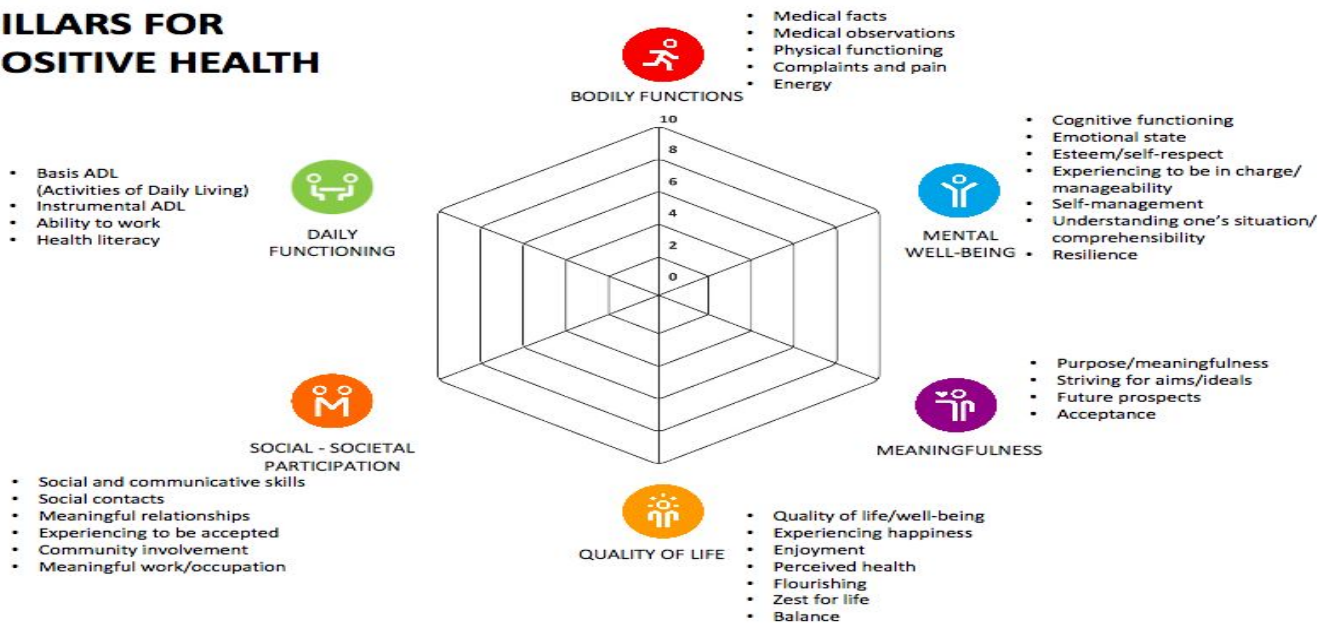


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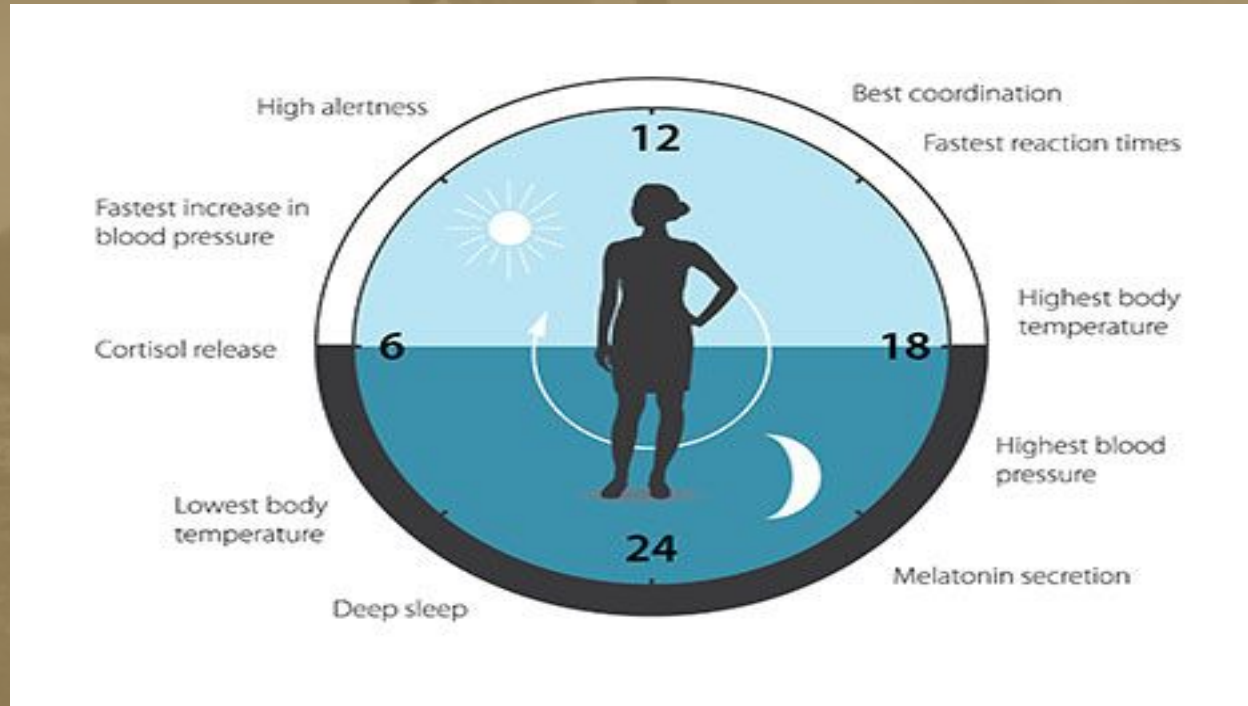


Personal Digital Running / Coaching

PILLARS FOR POSITIVE HEALTH



Personal Digital Running / Coaching



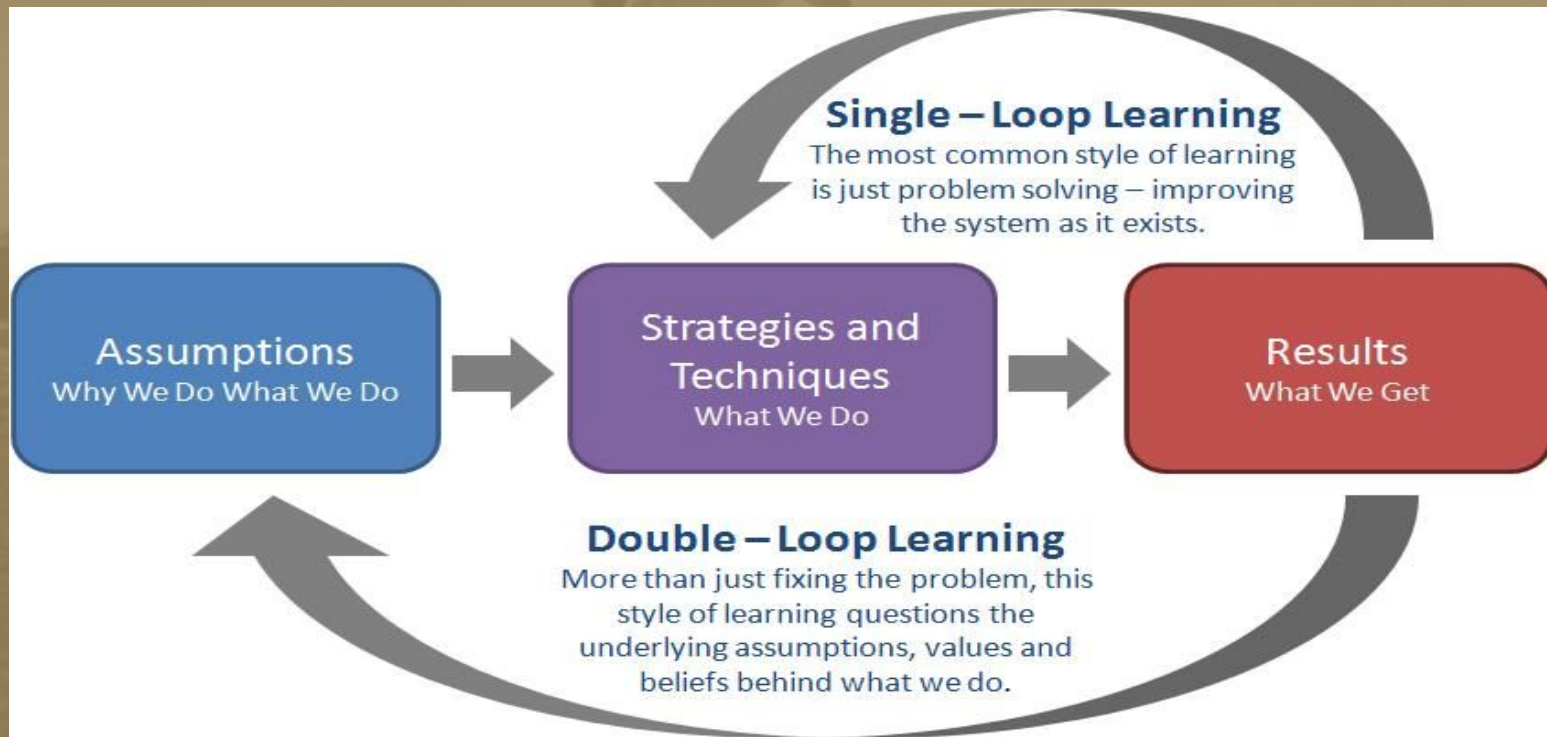
Personal Digital Running / Coaching



Personal Digital Running / Coaching



Personal Digital Running / Coaching



Personal Digital Running / Coaching

上医医未病之病
中医医将病之病
下医医已病之病

~ 黄帝内经 ~

**Superior doctors prevent the disease.
Mediocre doctors treat the disease before evident.
Inferior doctors treat the full blown disease.**

- Huang Dee: Nai-Ching (2600 B.C. 1st Chinese Medical Text.)

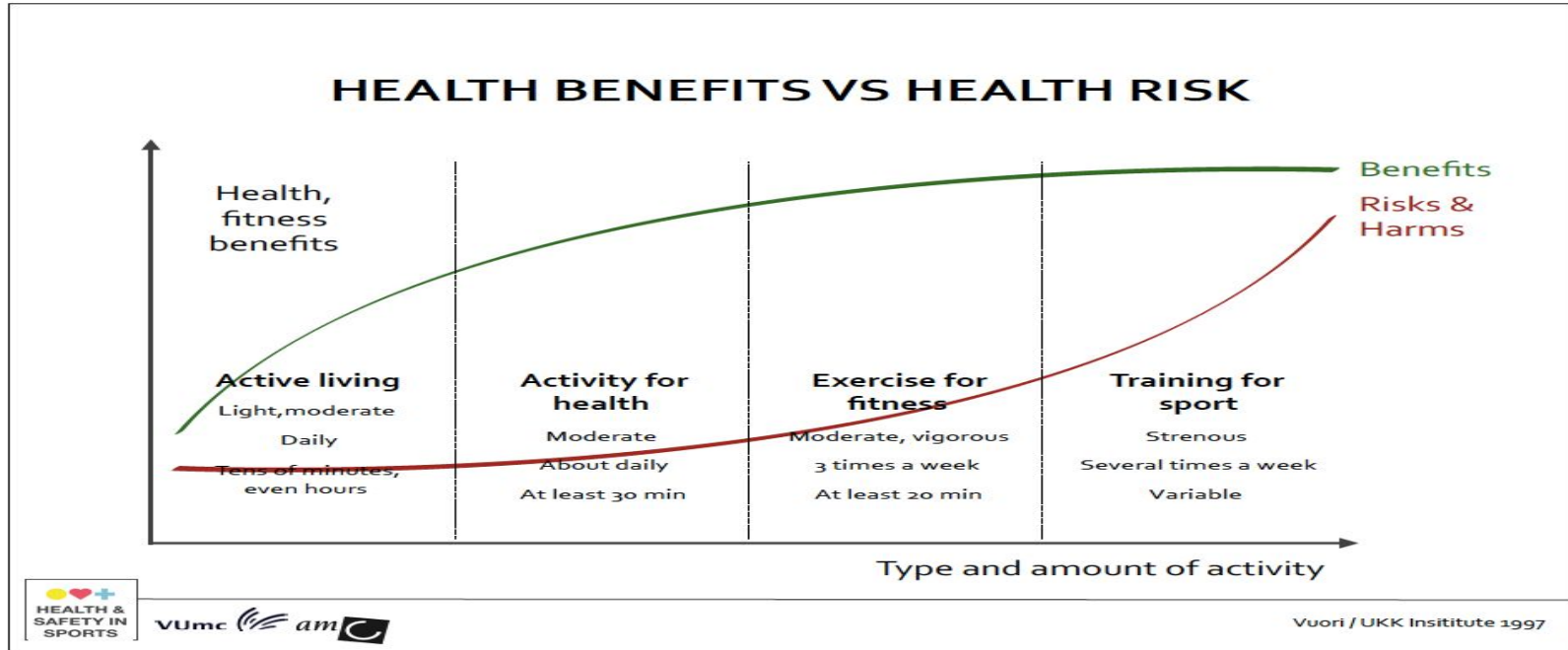
Running: Health Risk?

- *Injury prone*
- *Not sustainable for a lot of people*
- *Lack of 'real' support (e.g. science, health, coaching)*
- *Little 'learning', e.g. QS-like*
 - *What did you do?*
 - *How did you do it?*
 - *What did you learn?*

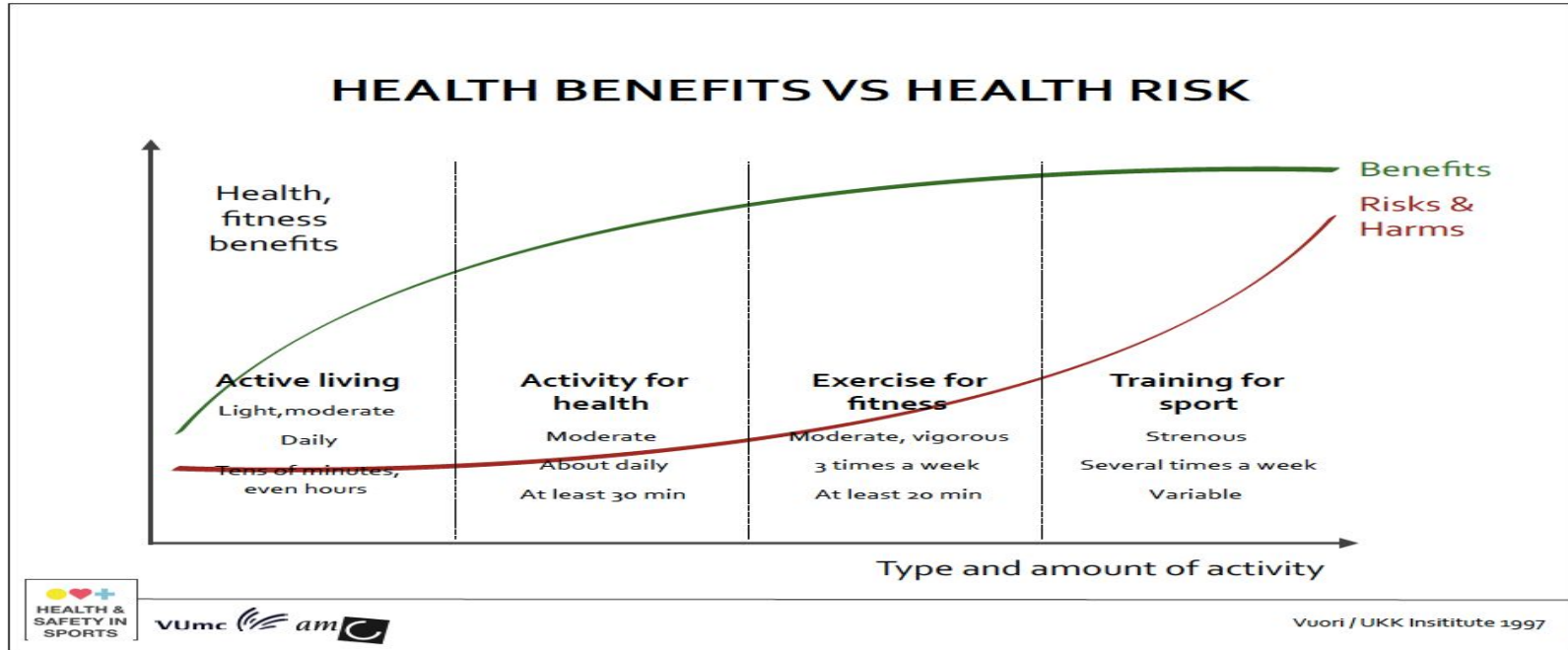
> *Better not do this alone?!*



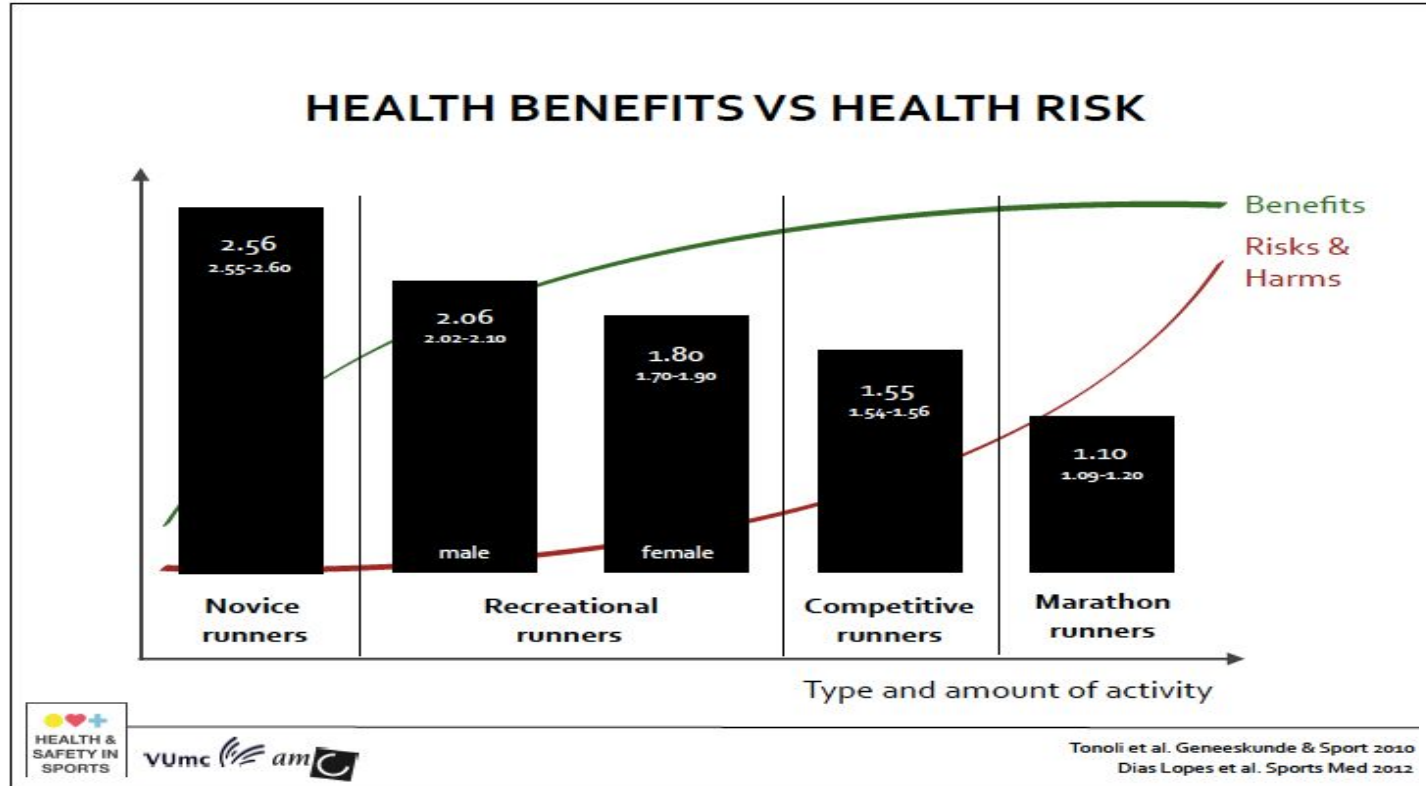
Running: Health Risk?! (...)



Running: Health Risk?! (...)



Marathon: Health Risk?! (...)



Running: Not sustainable?!

Annual cost of running related injuries

389.500.000 €

(The Netherlands: 2.1 mln runners)

Why have a Coach?

“Good coaching is one of the most important measures to reduce the risk of injury (and overtraining/loading)”

Jan Ekstrand (FIFA): *“There is an association between injury rates (...) and the leadership style of the head coach”*

BMJ Journals

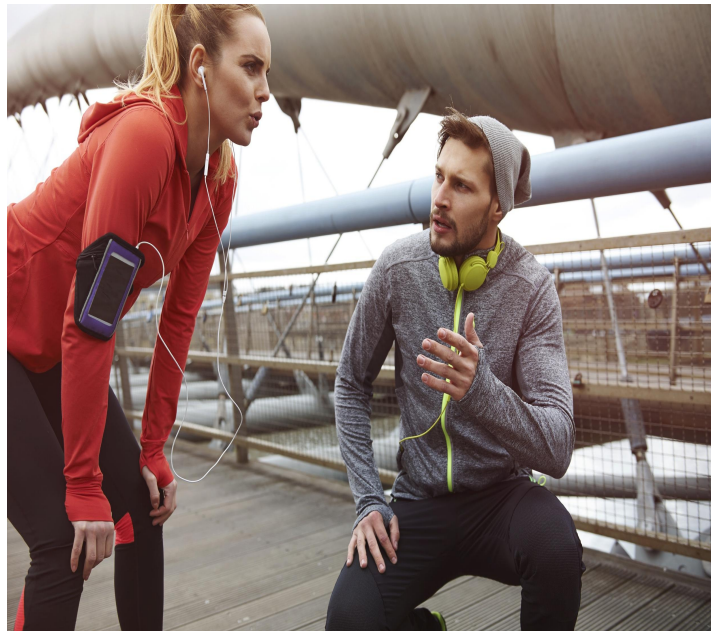
British Journal of
Sports Medicine



Why makes a good Coach?

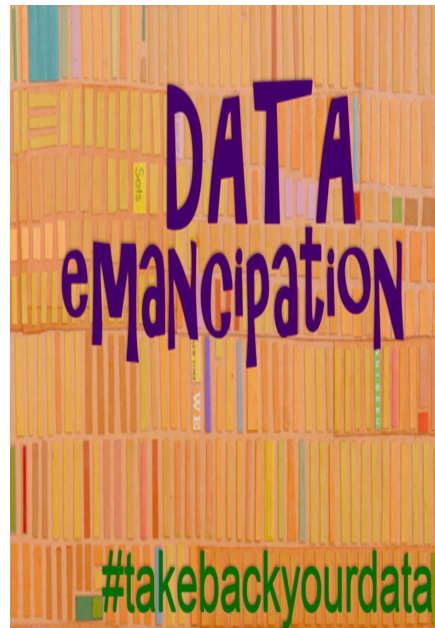
- *Observation and communication skills*
- *'Brutally truthful', because of trust , authority and 'shared goal'*
- *Empathy*
- *Teacher, to accelerate learning*
- *Analytical / digital skills, to be the 'human in the loop'*

Question: can you coach yourself?



Digital Coaching

- 'Greenfield' > little proof / lineage, 'belief' seems to be rising now
- 'Controversy' > it could undermine authority and be disruptive
- 'Emancipation'
- Lack of useful / meaningful 'performance drivers', actionable KPI's
- Real-time data real-time 'thinking'



Digital Coaching (...)

- What is (not) happening WHEN, WHY is that and what can I do about it?

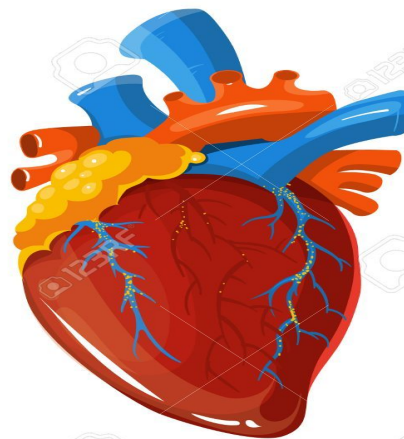
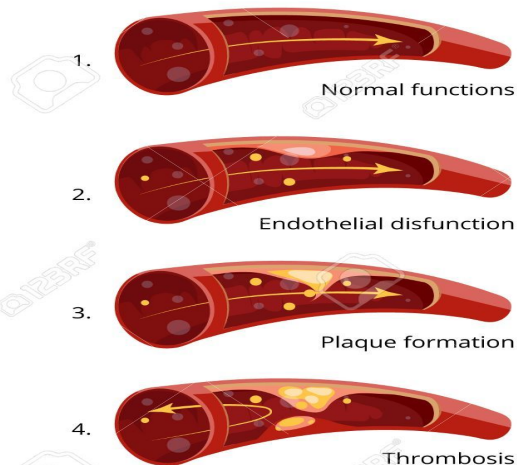


CHYRONHEGO

Why Listen to your Heart?

ATHEROSCLEROSIS

PROGRESSING OF AN ILLNESS



Why Listen to your Heart?

“However, a U-shaped curve was apparent for mortality with respect to running dose, with the peak benefit noted with slow-to-moderate running speeds, frequency of about 3 times per week, and 1 to 2 h.wk⁻¹ of running. Very high doses of running, however, were associated with trends of worse survival compared with either non-runners or groups of low- and moderate-dose runners.” (uit ‘Lavie et al. Exercise and the Heart the Harm of Too Little and Too Much’).

Digital Coaching on HR?

- *HR/HF values can be easily measured by many mainstreams devices, which are affordable*
- *Meaningful / reliable datapoints (at least, to a data scientist)*
- *..but still too abstract for most people*

Question: are HR wearables 'medical devices'?



Digital Coaching on HRV!

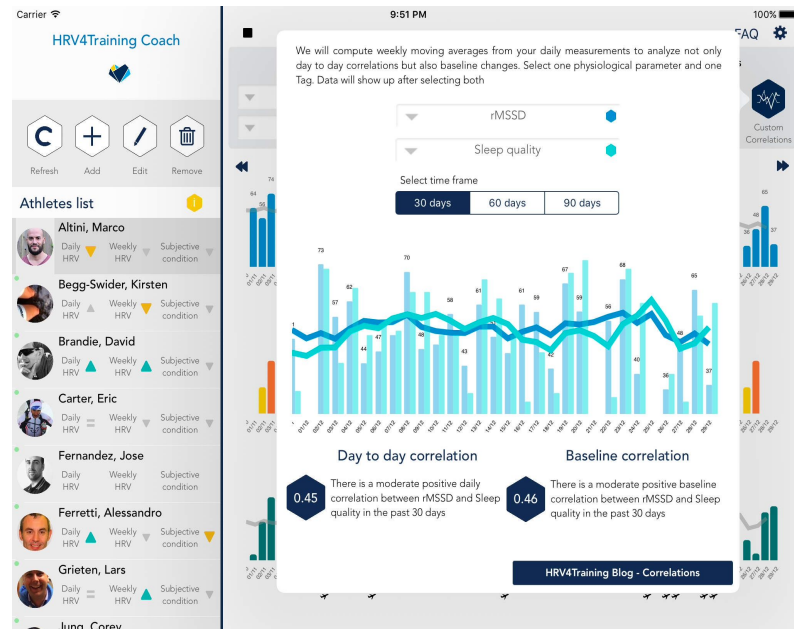
- *HRV can be easily linked to things most people seem to be (willing) to understand or follow up*
- *Full scope: sleep, nutrition, exercise, work, etc.*
- *Great apps, e.g. HRV4Training*
- *1 minute 'camera/finger' measurement*

Question: is HRV a 'useful' indicator of stress levels?



Project 'Digital Coaching on HRV'

- *Co-creation with National Athletics League ('Atletiekunie')*
- *20 runners*
- *30 days, daily measurements*
- *Standardised protocol*
- *Shared blogging*
- *Using HRV4training app (user) and dashboard*
- *HRV-based coaching by HRV expert*



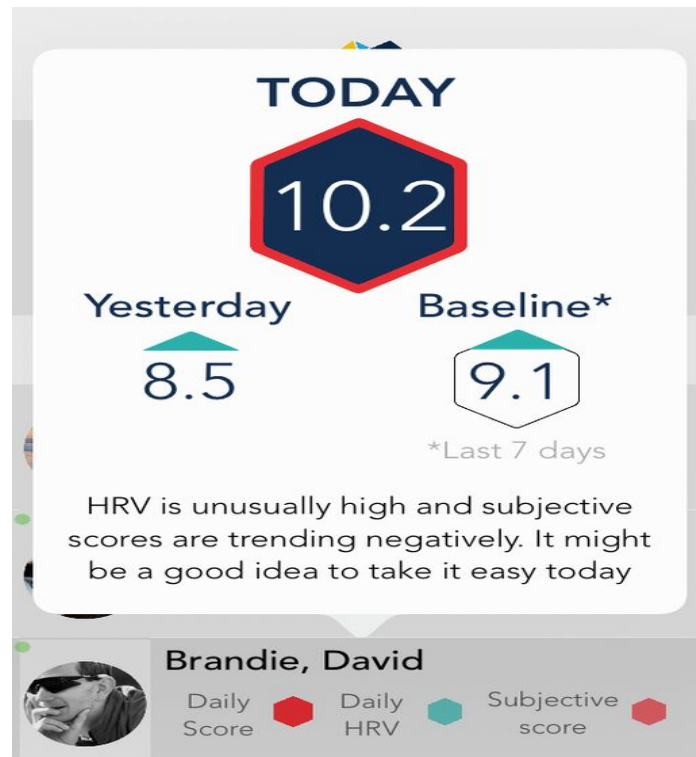
Project Findings

- *Camera measurements 'work' and are 'fun'*
- *'Good Quality Data'*
- *1 minute/ no hassle measurement really lowers the barrier*
- *Great team dynamics, 'people helping people'*
- *Good willingness to reflect and share*
- *Several similarities with the QS 'Blood Testers' project!*



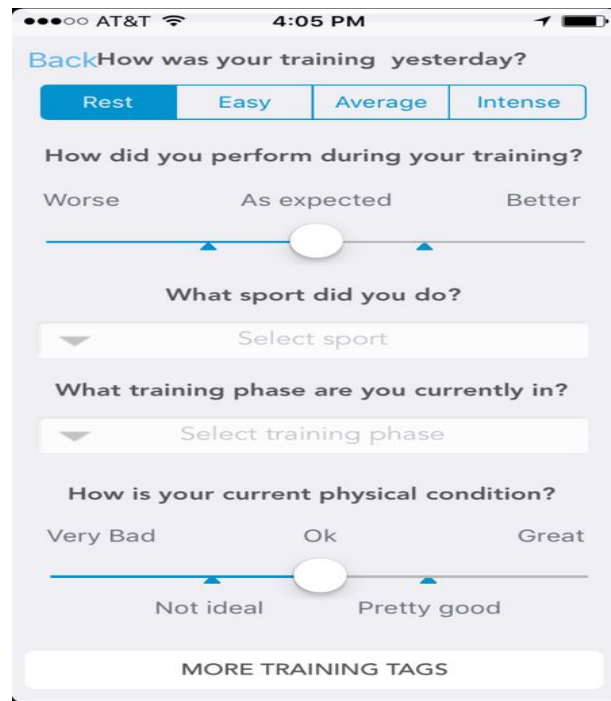
Project Findings (...)

- *The 'qualitative' score works to benchmark you vs you, today vs yesterday*
- *'Good Quality Data'*
- *1 minute/ no hassle measurement really lowers the barrier*
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- *Good willingness to reflect and share*
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Project Findings (...)

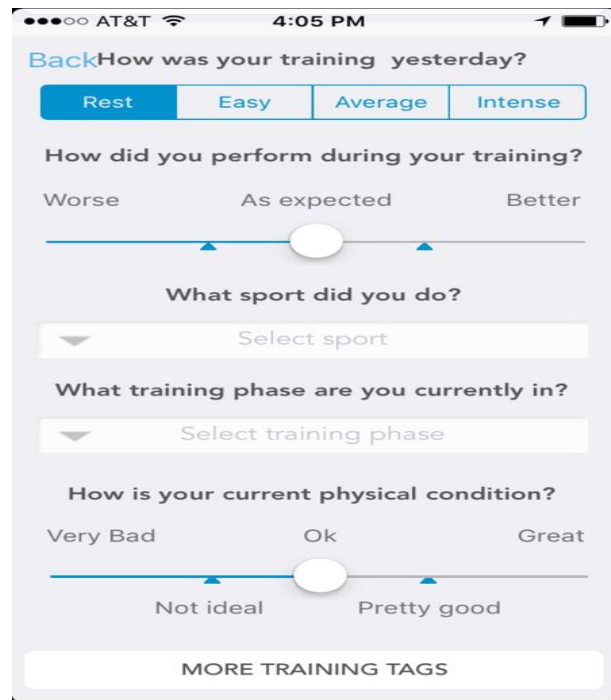
- *Qualitative feedback with text + score worked and triggered self reflection*
- *Tags were useful, but still some sensitive issues regarding privacy*
- *Having data to use to cross check personal perception and feelings was a real eye opener*
- *Several signals of overtraining were seen and discussed > taboo?!*



The screenshot shows a mobile app interface for tracking training feedback. At the top, the status bar shows 'AT&T', signal strength, Wi-Fi, and the time '4:05 PM'. The app header has a 'Back' button and the text 'How was your training yesterday?'. Below this are four tabs: 'Rest', 'Easy', 'Average', and 'Intense'. The main content area asks 'How did you perform during your training?' with a slider ranging from 'Worse' to 'Better', with 'As expected' in the middle. Below this is a question 'What sport did you do?' with a dropdown menu labeled 'Select sport'. Another question 'What training phase are you currently in?' has a dropdown menu labeled 'Select training phase'. The next question is 'How is your current physical condition?' with a slider ranging from 'Very Bad' to 'Great', with 'Not ideal' and 'Pretty good' marked. At the bottom is a button labeled 'MORE TRAINING TAGS'.

Project Findings (...)

- *Negative correlations between work and exercise were found*
- *Most participants found it easy to find to time and the discipline to do the daily measurements*
- *HRV4Training is great for basic coaching, but experts should always be consulted when there are real concerns*



The screenshot shows the HRV4Training app interface on a smartphone. At the top, the status bar displays 'AT&T', signal strength, Wi-Fi, and the time '4:05 PM'. The app header says 'Back' and 'How was your training yesterday?'. Below this are four tabs: 'Rest', 'Easy', 'Average', and 'Intense'. The 'Easy' tab is selected. The main question is 'How did you perform during your training?'. Below this is a slider with 'Worse' on the left, 'As expected' in the middle, and 'Better' on the right. The slider is positioned slightly past 'As expected'. Below the slider is the question 'What sport did you do?' with a dropdown menu showing 'Select sport'. Below that is the question 'What training phase are you currently in?' with a dropdown menu showing 'Select training phase'. Below that is the question 'How is your current physical condition?'. Below this is a slider with 'Very Bad' on the left, 'Ok' in the middle, and 'Great' on the right. The slider is positioned exactly at 'Ok'. Below the slider are the labels 'Not ideal' and 'Pretty good'. At the bottom is a button labeled 'MORE TRAINING TAGS'.

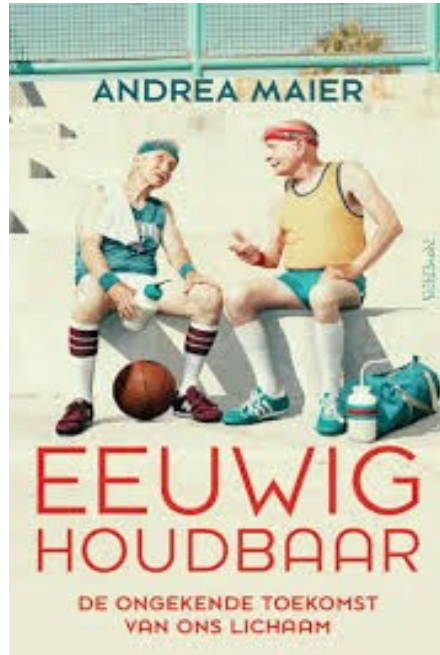
Running with a Safety Belt ?!

When we run, an enormous amount of data from our 'on board' biological sensors is processed by our brain. We could benefit from this data by using wearables

What if you could be notified when the risk of injury is high?



Running as 'Life Hacking'.. .. to grow old and (w)healthy?!





Running:
the best and cheapest way to
self medicate, stay healthy
and enjoy life?

Running Training with HRV

‘Listen to your Heart!’



Thank You ! For Q&A, please contact...

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