

Exercise Prescription for Health as an Approach for Motivating to Physical Activity

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Hypothesis:

Exercise prescription for Health may enhance physical activity

- Regular physical activity is strongly associated with lower non-communicable diseases in prevention, therapy and rehabilitation.
- Conversly, sedentary behaviour or exercise deficiency syndrom has been associated with several chronic conditions. Since many years, exercise prescription was suggested besides brief advices and motivational interviewing as an approach to motivate healthy persons and patients, starting with and adherence to regular physical activity.
- This is confirmed by a selective review of EPH indicating positive results and exercise adherence

Health Definition including Self Responsibility as an Approach to motivate healthy Persons and Patients.

Health is defined by...

- Genes (Genetics) (about 15 %)
- Environment (e.g.. **particular matter**, **passive smoking**)
- **social and “livable“ environment**, (i.e. population based interventions)

and adequate healthcare provision (about 35 %)

However: Health-conscious lifestyle (= active lifestyle) contributes about 50 % to individual health

Therefore : **„50% „ Self-responsibility“**

is the most important and crucial factor for obtaining health

Training Recommendation For physician’s desk

Exercise prescription for health : Personalized advice with FITT-Principle

Training recommendation for prevention and therapy in diseases (© EFSMA)
General recommendations: Warming up about 3 to 5 min, cooling down 3 – 5 min, flexibility training daily
(For Borg-Scale or RPE – Scale, Abbreviations, Kind of sports, and HITT: High intensity interval training see below)

| | Frequency/Week | Intensity | Time (duration) | Type of training | Type of sports | Strength training |
|------------------------|---|---|---|----------------------|--|--|
| Prevention in general | Low intensity: 5/week Vigorous intensity: 3/week | Low intensity: 40–85 % HRmax RPE 10-13 Vigorous intensity: 65-85 % HRmax RPE > 13-16 | Low intensity: > 30min/session or 150min/week Vigorous intensity: > 25/min/session or 75min/week | Endurance, strength. | Running, walking, cycling, swimming, skating, cross-country ski. | 70 % of 1RM > 2-3/week, 10-15 reps, 1-3 sets. |
| Coronary heart disease | 3–5/week Vigorous intensity: 3/week | 50–80 % VO ₂ max or 40-70 % HRmax RPE 12–15 maybe:HITT* | 40-60 min/session < 30 min | Endurance, strength. | Running, walking, cycling, swimming. | 60-75 % of 1RM, > 2/week, 8–12 reps, 2-3 sets. |
| | | | Vigorous intensity: > 20 min/session HITT* : see below | | | |

Training Recommendation with FITT Data (28 diseases)

| | Frequency/Week | Intensity | Time (duration) | Type of training | Type of sports | Strength training |
|--|--------------------------------------|--|--|--|---|---|
| Heart Failure | 3–5/week | Low – moderate intensity: 40-80 %Vo2max RPE 11- 15 HITT*: with 90% 4 min and 3 min pause in between | 15-60 min/session HITT* : for details see below | Endurance, strength, combination, respiratory muscle training (30% of max insp. pressure). | Jogging, (Nordic) walking, cycling, aerobics, cross-country ski. | 60-75 % of 1RM, 2-5/week, 8–12 reps, 2-3 sets, RPE local 13-15. |
| Rhythm Disturbances | 3 – 5 /week 2 – 3 /week | Moderate intensity: 40–60 %VO ₂ max, RPE: 11- 13 Vigorous intensity: 60-80 %VO ₂ max RPE: 9 - 15 | 30-60 min/session 20-30 min/session | Endurance, flexibility, sensomotoric, muscle, endurance. | Running, nordic ski, aerobics, cycling. | 40–60 % of 1 RM, 12-15 reps, 3 sets, 8 -10 exercises, RPE 11-13 (– 15). |
| Arterial Hypertension (Frequent control of blood pressure) e.g. ambulant | 3 – 5 (7) /week 2 -3 (4)/week | Moderate intensity: 40-80 %VO ₂ max, RPE: 11-13 Vigorous intensity: 80-80 %VO ₂ max RPE: 9-15 | 30-45 min/session 20-30 min/session | Endurance, flexibility, senso-motoric, muscle, endurance. | Jogging, (Nordic) walking, swimming, scaling, aerobics, dance, cycling. | 60-75 % of 1RM, 2-5/week, 8–12 reps, 2-3 sets, RPE local 13-15. |

The Current Situation:

Most people are less active and more sedentary

Result : Exercise deficit

Exercise Deficiency Syndrome

Risk for cardiovascular and all-cause mortality



| Sitting Time/day | | Sedentary Lifestyle | Active Lifestyle | |
|--|-------------|--------------------------|-----------------------|-------------------------|
| excessive | screen time | activities in daily life | occasional | regularly |
| > 8 – 24 h | > 4 h/day | low moderate | physical activity | |
| (intensive) TV, PC, e-games, surfing, gaming | | e.g. stair case walking | 1/week < 150 min/week | ≥ 3/week ≥ 150 min/week |

Prescription of Regular Exercise

How it got started: Studies and Results

- Gossner Germany 1982. Recipe for Sports (no acceptance)
- Swinburn, NZ 1998: Ex. Prescription N= 456 ,6-12 months positive longer adherence, more amount of exercise
- Smith, 2000: Prescription alone is not enough, need some written material
- Cummiskey, 2013: ex. deficiency syndrome and ex prescription for health
- Elly, 2014 (n= 878): 12 months, significant increase of exercise amount
- Löllgen, Zupet: 2015: Ex. prescription and Training recommendations
- Exercise prescription with written FITT data
- However, quality of these studies are partially low –
- Endpoints: fitness, short duration, lack of hard endpoints,

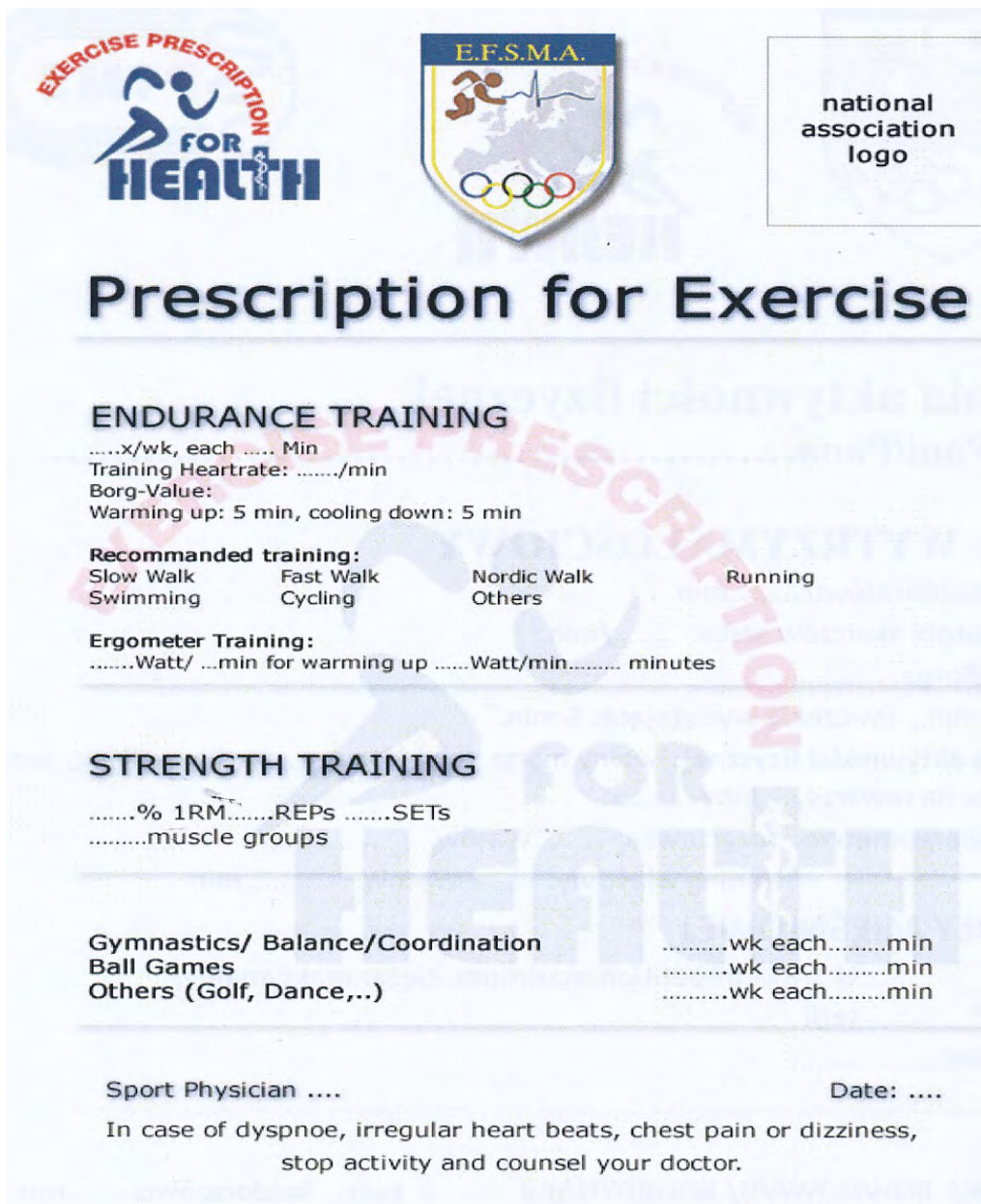
Some more Studies on Exercise Prescription

Most studies with positive results

- Sörensen 2006 MetaAnalysis, 22 studies, Verum: 5 -10% increase adherence, CRFitness increased
- Thornton,2016: Canada Exprescription, no additional material
- Onerup 2018, 9 Studies,n= 642; 5 RCT positive results (adherence, amount), test 6min walk
- Own Studies: Diabetes,COPD, Hypertension:_FITT principle**(not yet finished): FITT principal and personalized
- EPH: **F**requency, **I**ntensity, **T**ime (session), **T**ype, **P**rogression, **S**trength
- Personalized**: V02max (dir., indir.) Disease or Health, % of FITT
- Swedish Book, ACSM –book and more references (Guidelines)

The EFSMA Project : Step by Step to improve Physical activity by Exercise Prescription for Health

- 5th Vital Sign** is regular exercise: for the records (Sallis,2011,Thornton,2016):
- Every doctor** at **every contact with patient** has to ask for regular physical activity (EFSMA,2013)
- Brief Advice** : is cost effective, works. Studies vary in quality duration, cost effectiveness (Vijay,2016)
- Exercise Prescription for Health**
- Most studies so far are positive for short time adherence
- Own studies on Hypertension, Diabetes, COPD not yet finished.



EFSMA: European Federation of Sports Medicine Associations

The EFSMA Project
EPH in 28 countries

Exercise Prescription for Health (EPH) used in 28 countries by means of the FITT Principle and **Training recommendations** as personalized medicine

General Recommendations

Leisure time athletes , trained & competitive athletes



W.C. Röntgen was born in Remscheid

Conclusion

- Exercise Prescription for Health** may be an important approach for motivating people to **regular physical activity** and **adherence**.
- In addition, the described method for **training recommendation** in healthy and diseased people is a strictly **personalized approach** considering state of disease, cardiorespiratory fitness and type of activity.
EPH gives written **personalized recommendations** using the FITT table and underlying health or disease
- There is a large **deficiency in hospitals** when discharging patients:
- They have large lists of drugs, but **no specific and precise recipe** for lifestyle **and not** especially for regular physical activity after discharge.