

Exercise Prescription for Health and Life

Pro's and Con's

EFSMA Congress
Antwerp, 2015

H.Löllgen, Remscheid

Joh. Gutenberg – University, Mainz



Remscheid



Exercise prescription for Health and Life



Prescription for Exercise

ENDURANCE TRAINING

.....x/wk, each Min

Training Heartrate:/min

Borg-Value:

Warming up: 5 min, cooling down: 5 min

Recommended training:

Slow Walk Fast Walk Nordic Walk Running
Swimming Cycling Others

Ergometer Training:

.....Watt/ ...min for warming upWatt/min..... minutes

STRENGTH TRAINING

.....% 1RM.....REPsSETS

.....muscle groups

Gymnastics/ Balance/Coordinationwk each.....min

Ball Gameswk each.....min

Others (Golf, Dance,..)wk each.....min

Sport Physician

Date:

In case of dyspnoe, irregular heart beats, chest pain or dizziness,
stop activity and counsel your doctor.

Use the **FITT** rule:

Frequency

Intensity

Time

Type

Background

- Most people in Europe are less active than recommended
- About **70%** of persons (and patients) visit **their GP** or **doctor** for being counseled for healthy lifestyle
- Regular physical activity is the **most significant intervention** (individual and population based) to preserve or re-establish health, longevity and quality of life (**prevention and therapy**).
- >>> **Physical activity acts like a drug**

Physical Activity

Acts like a drug, is an essential part of therapy

(Löllgen, DMW 2013:2253 ff.)

- **Indications:** Many, many (all organs)
- **Dosage: FITT:** Frequency, Intensity, Time (duration),
Type (of activity)
- **Dose - response** **yes, non-linear** relationship
- **Somatic effects** manifold
- **Psychoactive effects** present, many
- **Side effects** musculo-skeletal problems
- **Contraindications** acute illness

Exercise is even better than some drugs

>>> (Naci,Jama,2013 and Nunan BMC, 2013)

Evidence based indications for physical activity in
Prevention and Therapy
(cohort studies, **evidence**, class and grade)

- Coronary Artery Disease (IA)
- Arterial hypertension (- 4 -8 mmHg) (I,A)
- Chronic obstructive lung disease (IIb)
- Heart Failure (increase of EF !) (I,A)
- Cancer (Colon, prostatic,mamma) (IA)
- Osteoporosis (esp. women) (IA)
- Metabolic Syndrom, Diabetes mellitus (I,A)
- Chronic kidney disease (I,A)

„Pleitropic“ effects of physical activity :

>>> One agent but manifold effects

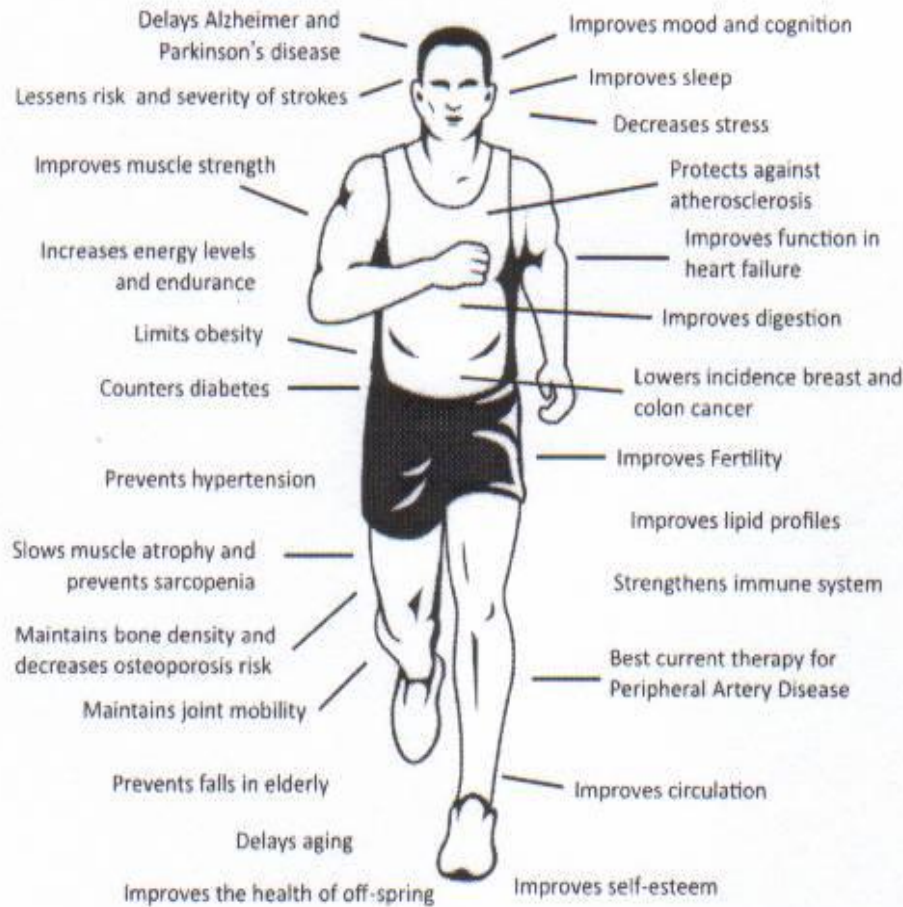


Figure 1. The many long-term benefits of regular endurance exercise

Rowe, Circ. 2014

What exercise can do for you !

More evidence based indications for physical activity in prevention and therapy

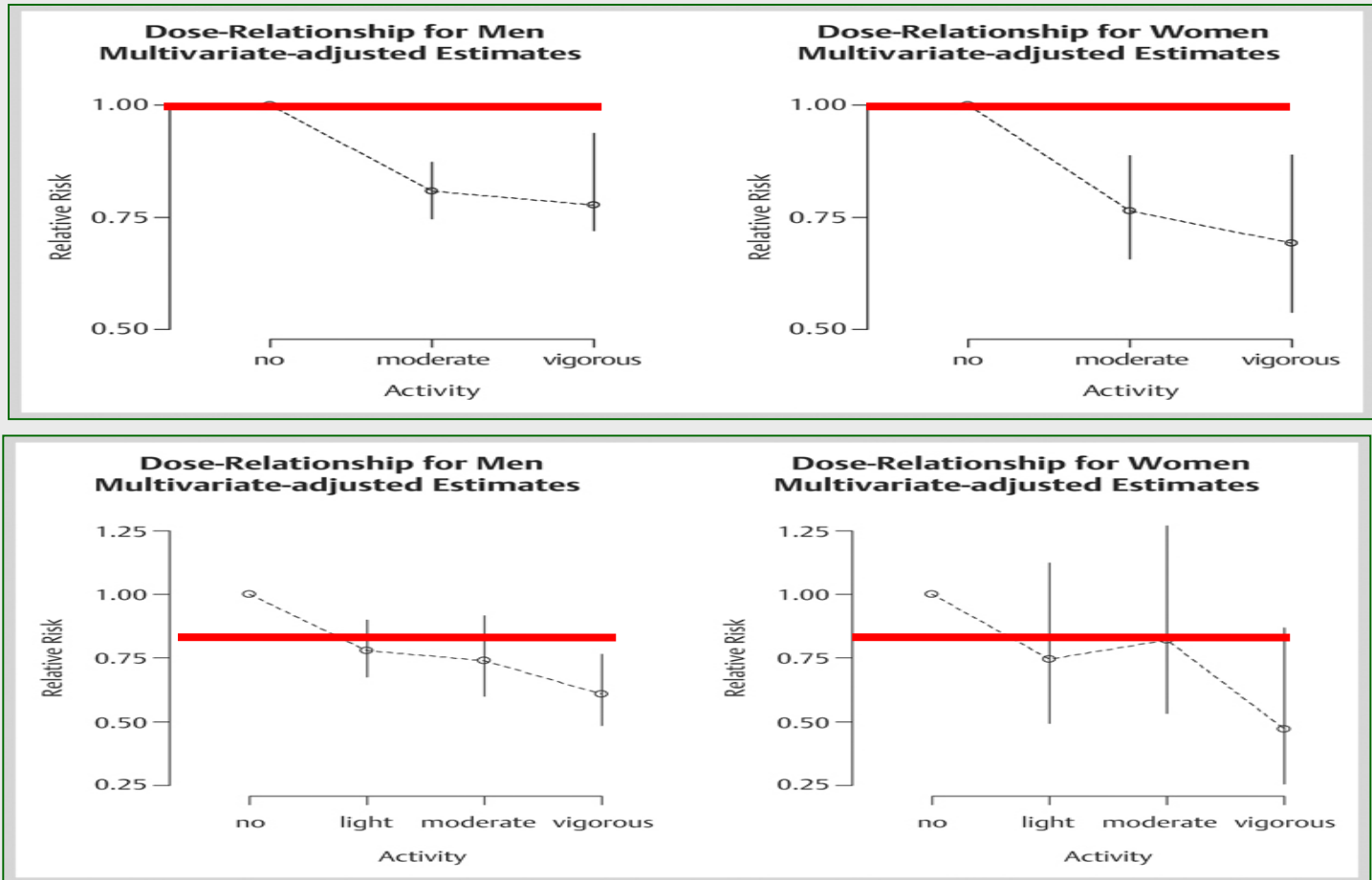
- Peripheral arterial disease (IA)
(walking more effective than any drug)
- Depression (IB)
- Cognitive function, **Dementia** (IA)
- Neurological diseases (stroke, parkinson's disease, fibromyalgie etc.) (IA)

For patient's counseling

>>>> Physical activity = Pleiotropic effects

Physical Activity and Health: Risk Reduction

Dose - Response Relationship (Non-linear)



Physical Activity and All-cause Mortality: An Updated Meta-analysis with Different Intensity Categories H. Löllgen, A. Böckenhoff, G. Knapp Int J Sports Med 2009; 30: 213-224

Dose- response relationship

Regular physical activity means longevity (+ 3 – 7 ys.; Moore, et al. 2013, Schnohr, P., 2013)

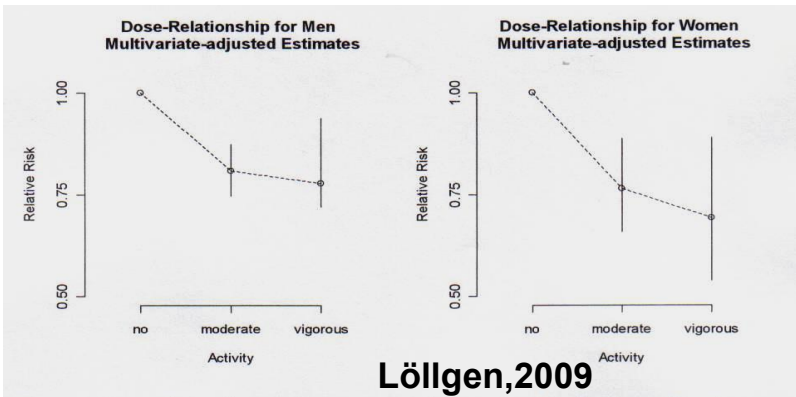
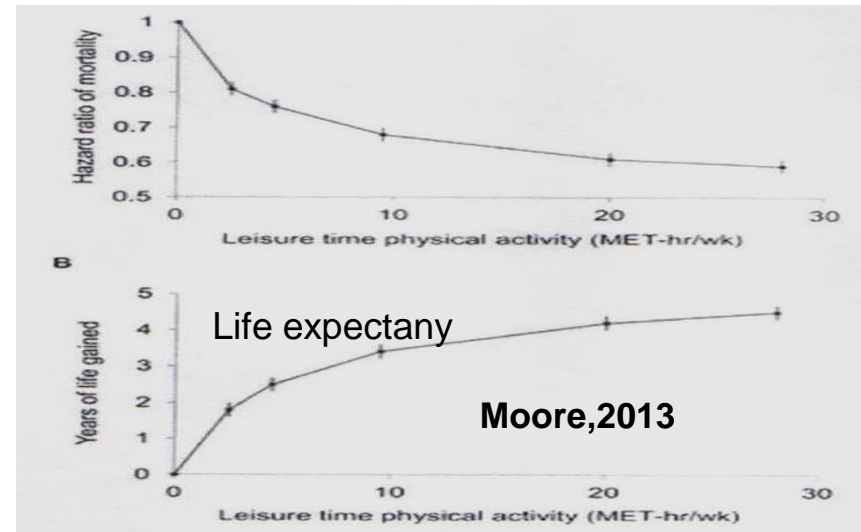
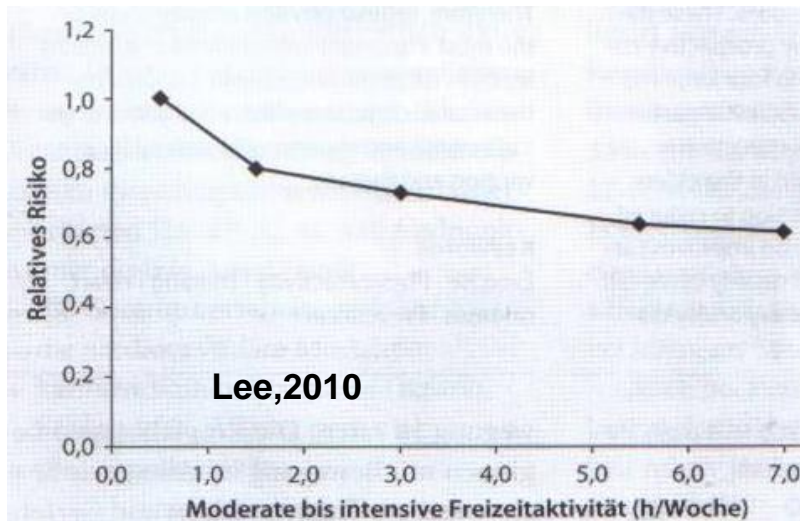
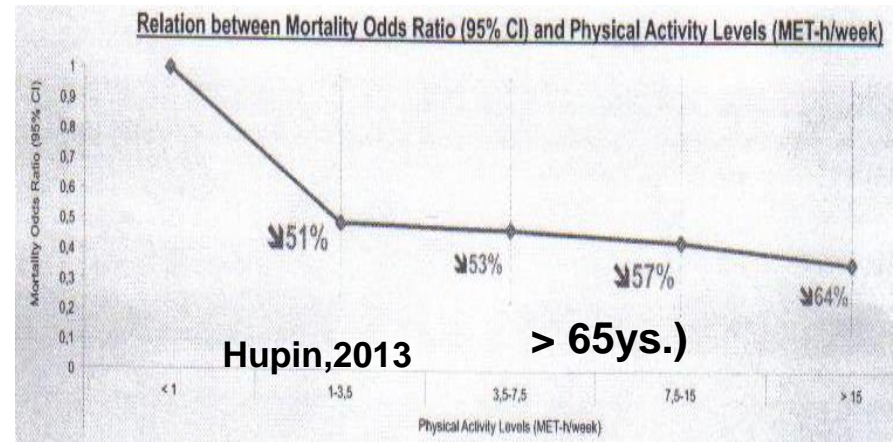


Figure 6: Dose-relationship based on meta-analytical results of multivariate-adjusted estimates for men (left) and women (right) in studies with three cohorts (estimates plus 95% confidence intervals).



Promoting physical activity

Some International Projects

- **The National Physical Activity Plan (NPAP):** American Heart Ass. (Kraus WE et al., *Circulation* 2015) and The National Coalition to promote physical activity
- The **Million Hearts** Cardiovascular Risk Reduction Model (CMS.gov)
- Europe: **Getting Europe Moving:** ISCA 2015
- HEPA and WHO: Healthy eating and physical activity
- **In-form:** German Action of Health Ministry and Consumer's Ministry
- and : **Exercise Prescription for Health and Life** by **EFSMA**

Physical **in**activity

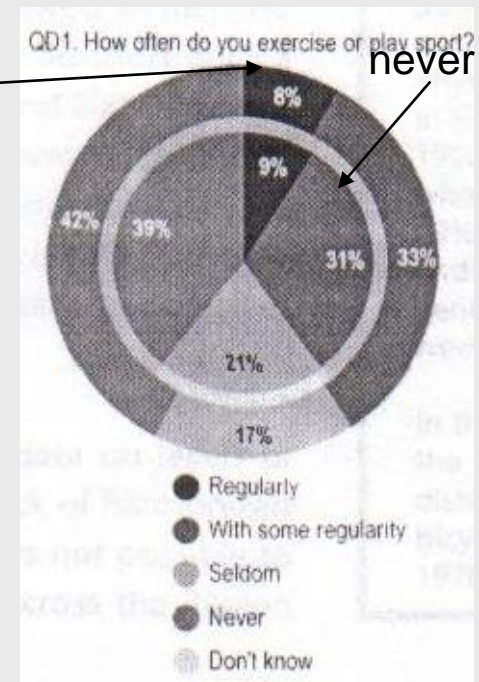
42 % of Europeans never exercise or play sports*

- **Physical inactivity is an established risk factor**
(WHO,FIMS,DGSP,AHA): **Exercise deficiency Syndrom**
(42% in Europe)

> Increases mortality and morbidity (regularly

- **Regular physical activity means**
Improved quality of life and autonomy
improved performance of activities of daily life (ADL)

> **Decreased mortality and morbidity**
Improvement of body function (Heart, Circulation, Metabolism, Bones, **Cognitive function** etc.)



* EU Commission

Exercise prescription: The situation

- Strong evidence (positive effects) for physical activity and **prevention** of several diseases
(**Evidence class A1**)
 - (Löllgen et al.,2009,Sofi et al.,Moore et al., Lee et al.,Nocom et al.Samitz et al.,2012)
- Strong evidence for **rehabilitation** (**A1**) (ESC guideline)
 - **diseases (Cardio-pulmonary diseases,cancer, metabolic etc.)**
- Strong evidence for positive effects of physical activity as **therapy** for many diseases ,adjuvant and causal

(Löllgen, DMW 2013)

•

However : Real life in hospital, practice, and politics

- Physical activity and exercise is **not** recommended as part of therapy, nor at discharge from hospital and rarely by GP or in primary care
- Physical activity is **not yet included** in the actual draft of law for prevention (Germany Fed. Government)
- Pre-Participation exam, counseling for physical activity and exercise prescription is not yet **reimbursed** by health insurance companies in all European countries, only in some

Situation in the elderly is even Inferior

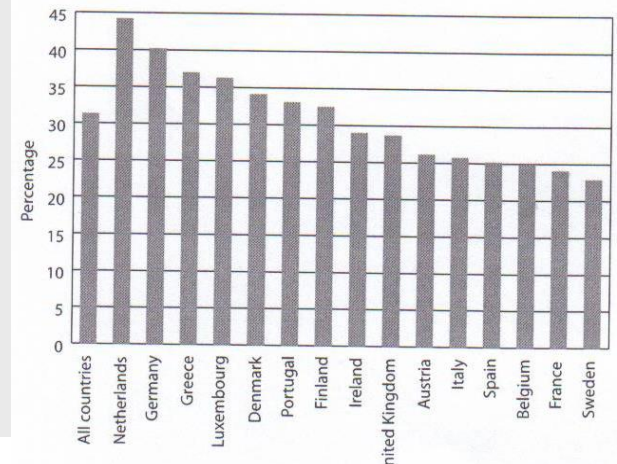
- Increasing number of older people
in a relative good general state (developed countries)
However: **Reduced physical activity in the aged**, „Anti-Ageing“ drugs without effects !!
Physical activity is most effective for „Anti-Ageing !!

- Physical activity reduces functional ageing (improves fitness) (?) (the only interventions that works)

And what about the recommendations

for Exercise prescription for health

Fig. 1. Proportion of adults (aged 15 years or over) in the EU classified as sufficiently active, 2002



Exercise Prescription for Health (EPH) Development

- First attempt and report: **The green prescription**
- Dr.E.Gossner in Augsburg, Bavaria,Germany (1980) no distribution all over Germany, no acceptance.
- EPH in New Zealand (and later in Australia, 1990):
>>> Success with better motivation of patients,
(Swineburn et al.) In USA : Blair 1995 recomm.
- EPH in Sweden 2003, in Berlin (2005,Dr. Wismach)
with success thanks to excellent marketing (2005 -)
- Individual Exercise prescription in Germany (2005, Remscheid, 2006 Munich),
- Sports medicine and sports organisation:2012 EPH in Germany

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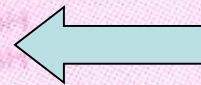
Recipe (FITT –Concept)

Individual Counseling and
recommendation (2005)

08/05

Remscheid, den

Rezept zur Bewegungstherapie



Early concept
in Germany
(2005)!

.....x/Woche, je Min.

Trainingspuls:/Min.

Borg-Wert:

Aufwärmen: 5 Min., „Abkühlen“: 5 Min.

Empfohlene Trainingsart:

- Gehen Laufen Walking Nordic Walking
 Schwimmen Radfahren

Ergometertraining: Watt/..... Min. zum Aufwärmen,

..... Watt/Min. Minuten

Gymnastik: Min./Tag

Kraftübungen: % der max. Kraft

..... Min./Tag

Zu Risiken und Nebenwirkungen siehe Rückseite

Bei übermäßiger Luftnot, verstärktem Herzstolpern, Brustenge oder Schwindel: Pause. Vorstellung beim Hausarzt

Bei starker Brustenge (und unbekannter) Herzkrankheit:
Hausarzt anrufen, ggf. Notarzt (112)

Exercise prescription for health in Germany

The Berlin Activity

Introduced by
J.Wismach, Berlin 2005
Together with Berlin
Sports Organisations
with great success

Training for

- Cardiovasc. System
- Musculo-scelettal
- Relaxation, Stress
- Coordination, flexibility

DOSB, BÄK, DGSP
Sports Medicine

Krankenversicherung bzw. Kostenträger		
Name, Vorname der/des Versicherten		
		geb. am
Kassen-Nr.	Versicherten-Nr.	Status
Betriebsstätten-Nr.	Arzt-Nr.	Datum

Rezept für Bewegung

Regelmäßige körperliche Aktivität tut Ihnen und Ihrer Gesundheit gut!

DEUTSCHER OLYMPISCHER SPORTBUND
SPORT PRO GESUNDHEIT
MIT DER BUNDESÄRZTKAMMER
GEPRÜFT & EMPFOHLEN

Bewegung kann Krankheiten des Herz-Kreislauf- und des Stoffwechselsystems sowie des Bewegungsapparates verhindern und zur Entspannung beitragen. Daher empfehle ich Ihnen die Teilnahme an einem Angebot, das mit dem Qualitätssiegel **SPORT PRO GESUNDHEIT** zertifiziert ist. Die Teilnahme an diesen qualitätsgesicherten Kursen der Sportvereine wird von den meisten gesetzlichen Krankenkassen finanziell gefördert – informieren Sie sich dort über Einzelheiten!

Darüber hinaus empfehle ich, täglich mehr Bewegung in Ihren Alltag zu integrieren!

Ich empfehle Ihnen ein Training mit folgendem Schwerpunkt:

- Herz-Kreislauf
- Muskel-Skelettsystem
- Entspannung/Stressbewältigung
- Koordination und motorische Förderung

Hinweise an die Übungsleitung:

DEUTSCHER OLYMPISCHER SPORTBUND BUNDESÄRZTKAMMER DGSP
Deutscher Gesundheits- und Präventions-
Sportstättenverband

Exercise prescription in Germany

BÄK,DGSP,DOSB

- Common action of German Chamber of Physicians, German Fed.Sports Medicine and German Olympic Sports Fed. (2014)

In all countries in the European Union (since 2014)

- **Exercise prescription for Health and Life** (by EFSMA)



Exercise Prescription for Health (EPH)

- Goals: Better motivation for the patient (**Choose to move**)
- Activity is equivalent to drug therapy, but needs personal commitment, information to patient
- Physical activity is pleiotrop : One action for many diseases (prevention, therapy, many organ systems)
- Physical activity is the **fifth vital sign** (Sallis, 2011, Blair,2014) :
- General and mandatory part of history in all pts.

Exercise Prescription for Health (EPH)

- For all physicians and all specialities:

- **Every patient at every consultation with every physician** should be asked for regular activity (5th vital sign) and should be counseled **to be active.**

EPH pro Arguments for the physician

- Opportunity to **talk to your** patient about physical activity and healthy lifestyle (prevention !!)
- **Motivate the patient** by counseling on the manifold effects : **Be fit and healthier, feel better, live better and longer**
- **Before:** Start a **pre-participation examination** with an ECG at rest, exercise testing in males (> 45 ys,) and females (>55 ys,),
More detailed examination **if symptoms** and **risk factors** are present

EPH : pro arguments

- Counseling should be extended to **individual activity recommendations** (see EFSMA tables)
- Recommendations aligned and adjusted to the **patient's motivation**
- Symptoms as indications for further examinations:
Chest pain, dyspnoe, syncope, palpitations, fatigue and
Care for those back to sports after many years of inactivity >>> **(at increased cardiac risks)**

Benefits for the doctor

- **Image and competence gain** as a health consultant,
- **Improves patient's commitment**
- **Enhancement of exercise reduces the load on your drug budget**
- **Preparticipation and exercise testing will be refunded by insurance companies and at the same time, is a screening examination for latent disease**
- **On the long run, EPH is cost-effective** (Sanghavi et al., JAMA 2015)
- **Cons: Exercise prescription (as Recipe) may not (yet) be paid**
- **Counseling the patient may be time consuming but **not more** than prescription of drugs with many side effects**

Exercise Prescription for Health (EPH)

The problems ?

- No reimbursement for the physician (PPE, EPH) except for Sweden
- No education in sports medicine for medical students so far (deficit of politicians)
- Insufficient knowledge of sports medicine in physicians in hospitals (Löllgen, DÄint 2014)
- Insufficient knowledge of GP in exercise counseling

Problems with EPH, The Berlin experience

Keep in mind : Most of the doctors are convinced that Physical Activity works and they counsel the patients, but...

- Information in your region: to all (!) physicians, esp. GP,
- Care for support by the regional medical chamber (council)
- Information to patients and public, and via mass media
- Establish a close cooperation with **sports club and their trainers**, also with qualified fitness-studios
- Use the informations (brochure) of the national sports medicine association, use a **flyer** on EPH for the patients (to be edited by EFSMA)

Problems with EPH, The Berlin Experience

Keep in mind : Most of the doctors are convinced that Physical Activity works and is important for the patients

- Educate doctors assistant in sports medicine counseling and EPH (as in GER)
- Once a year: **Health Forum** for physicians, patients, trainers, sport physiotherapist, community
- Inform all physicians about the EPH via letter (postal) and via a newsletter if possible (twice a year) for amplification of the knowledge of EPH (see EFSMA Website for news)

Start an information campaign for EPH

Inform community, regional politicians who care for prevention, health care workers and industry

Points to be considered

(Mats Börjesson, Stockholm)

- National Guidelines (must include EPH)
- Logistics (counseling, doctors assistant, sports clubs, studios, see NPAP strategy)
- Reimbursement (differs from country to country)
- Education: Medical school, physicians in GP, in hospitals, and primary care
- Scientific evaluation (start with prospective studies, may be multicentric)
- Network of support
- Reference books (FYSS, Green Book, ACSM guideline book. 9th ed.)

Information material prepared by EFSMA

- Exercise for health and life: **The role of the doctor**
- EFSMA position paper: **Role of physical activity, movement and sports**
- **Tables for recommendations** of physical activity for prevention and disease (P.Zupet)
- Some basics in exercise physiology (Klissuras)
- Check regularly the **new EFSMA website** on science and education for EPH and beyond
- **(www.efsma-scientific.eu)**
- **Literature**: The Fyss Book, Stockholm (New ed. coming soon)
The ACSM:Guideline for exercise testing and prescription (9.th ed. !!!)
The Green book : Exercise prescription for health (by Joe Cummiskey, Dublin)

**Counseling for Physical activity, and training
recommendation,
clear and understandable !**



Conclusion

- Regular physical activity is effective in prevention, therapy and rehabilitation of many diseases
- Exercise prescription contributes to **health, fitness, quality of life and longevity**
- Exercise prescription contents
 - Pre-participation examination (incl. ECG)
 - Counseling for physical activity
 - Recommendations of frequency, intensity, time and type of exercise

Therefore: **Start tomorrow with prescription**

The Medical Progress (through Exercise Prescription for Health)



„Hundreds of years of
medical progress, and
all you can tell me is
being more active
and eat less“

Thanks for your attention

EPH

USA:

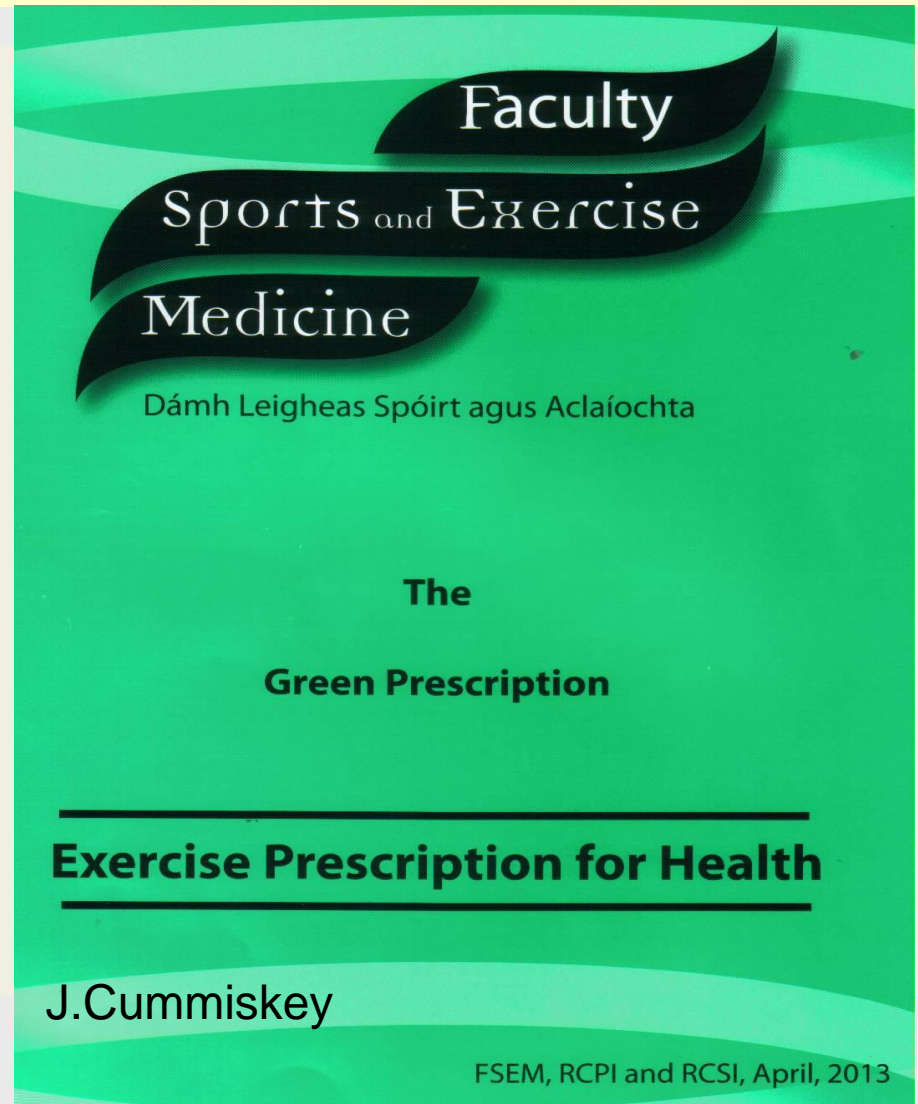
Exercise prescription

K. Khan, BJSM, 2013

Europa:

**Exercise prescription
for health**

Joe Cummiskey, 2013





Cologne at it's best

Priority Strategies for Implementation of the National Physical Activity Plan (NPAP) (USA)

- Education
- Business/Industry
- Parks, Recreation, Fitness and Sports
- Land Use and Community Design
- Health Care
- Public Health
- Mass Media

Demographic Change: Advantage and Chance

(F.Kluge et al., Plos one, Sept., No.9, 2014: e108501)

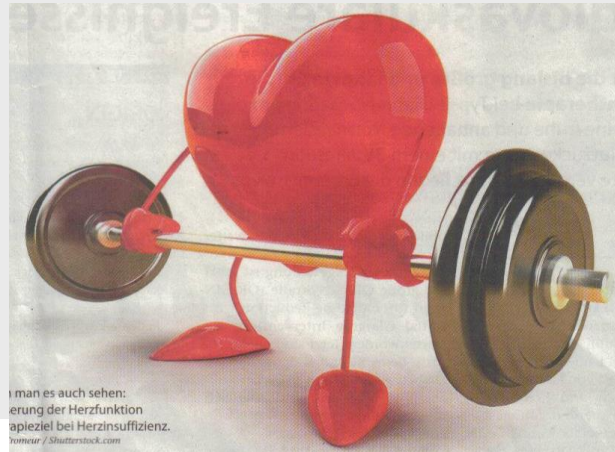
- Population (e.g. in Germany) : People become fewer and older, but healthier, greener and more productive.
- So recommend by recipe:

Walking is as good as jogging

Endurance training



Strength Training





Prescription for Exercise

ENDURANCE TRAINING

.....x/wk, each Min

Training Heartrate:/min

Borg-Value:

Warming up: 5 min, cooling down: 5 min

Recommended training:

Slow Walk

Fast Walk

Nordic Walk

Running

Swimming

Cycling

Others

Ergometer Training:

.....Watt/min for warming upWatt/min..... minutes

STRENGTH TRAINING

.....% 1RM.....REPsSETS

.....muscle groups

Gymnastics/ Balance/Coordination

Ball Games

Others (Golf, Dance,..)

.....wk each.....min

.....wk each.....min

.....wk each.....min

Sport Physician

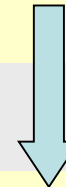
Date:

In case of dyspnoe, irregular heart beats, chest pain or dizziness,
stop activity and counsel your doctor.

FITT

**Frequency, Intensity, time,
Type of activity**

The EFSMA exercise
prescription for health
and life



Now introduced
all over Europe

Exercise prescription in practice

(Khan et al., BMJ 2011)

Practical steps for immediate exercise prescription in general practice

- Ask about physical activity at every consultation; consider it a vital sign
- Apply the "6As" to guide counselling—assess, advise, agree, assist, arrange, and assess again
- A written ("green") prescription is crucial—it takes just 30 seconds
- Display a poster with the physical activity guidelines prominently in the waiting room
- Consider categorising patients into frailty levels. There is no need to medicalise physical activity for most people
- Refer on—consider appropriate physicians, physiotherapists, clinical exercise physiologists, and certified fitness instructors
- Know your local resources for activity—the people and the places
- Remember that walking is free; find tips at: www.everybodywalk.org
- Follow up the patient to chart progress, set goals, solve problems, and identify and use social support
- Lobby to make low cost, evidence based, cognitive and behavioural interventions widely available for referral by healthcare providers

Physical Activity for Health and Life

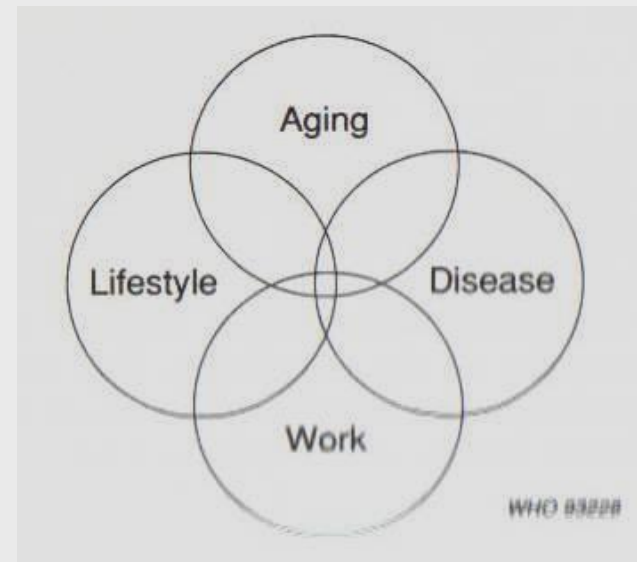
Effects of physical activity: Pleiotropy,
multiple effects on prevention and therapy (biological
„polypill“), longevity, QoL, autonomy (self
determination)

Counseling for physical activity: Individual,
How to get started, FITT
New : **Exercise prescription for health**,
- all over Germany and Europe -

The healthy 5: Successful Aging or Longevity ...

Smoking abstinence,
Regular exercise,
Weight management,
Healthy diet (mediterranean)
Control of blood pressure

(Yates, et. al. AIM, 2008),



Körperliche Aktivität: Psychoaktive Wirkungen

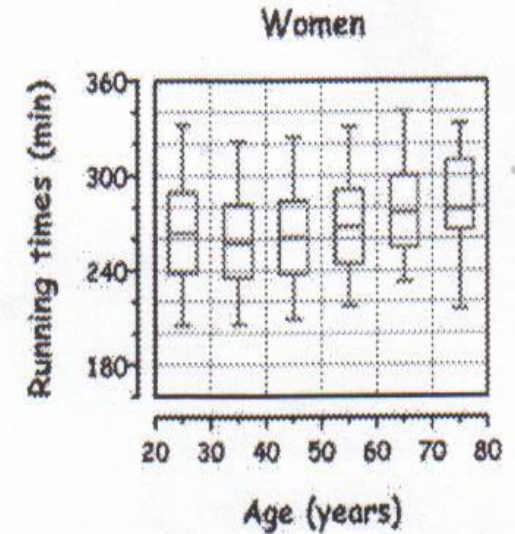
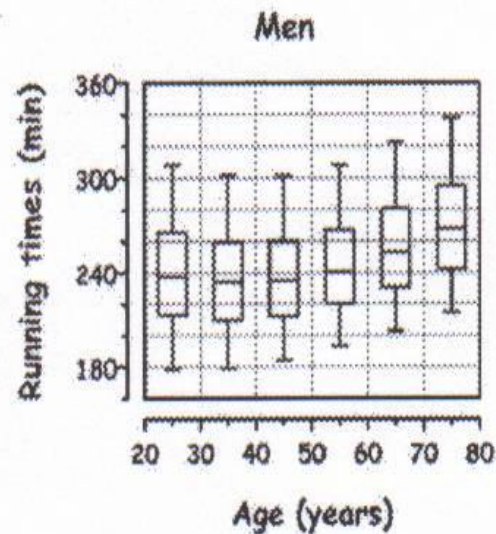
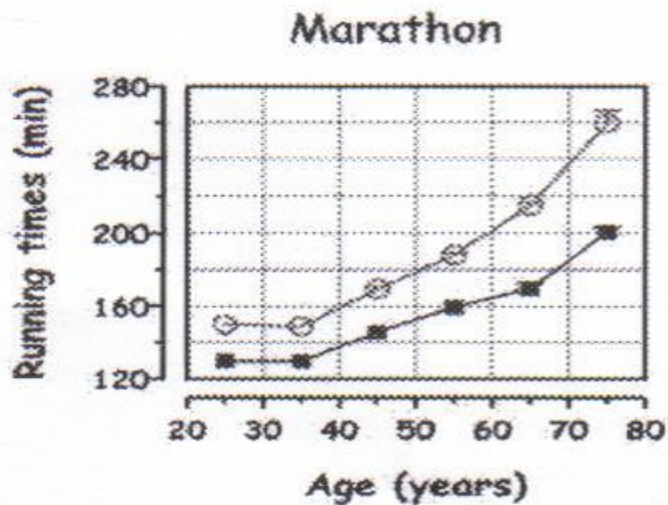
- Antidepressiv
- Fatigue Syndrom
- Stress
- „Burn out“
- Kognitive Funktion, Demenz, Alzheimer
- Bipolare Störungen (?)

Age-Related Changes in Marathon Performance:

(69 Competitions , n =135200 !) (Leyk et al.,2007)

Running Times of Top Ten Athletes

Running Times of Finishers



Aging starts at 60 ys +

Goethe, J.W.v. : „Lifestyle“ and „Antiaging“

Faust

Der Tragödie Erster Teil

Szene in der Hexenküche, 1788 (2)

Mephistopheles:

Gut! Ein Mittel, ohne Geld

Und Arzt und Zauberei, zu haben:

Begib dich gleich hinaus aufs Feld,

Fang an zu hacken und zu graben,

Erhalte dich und deinen Sinn

In einem ganz beschränkten Kreise,

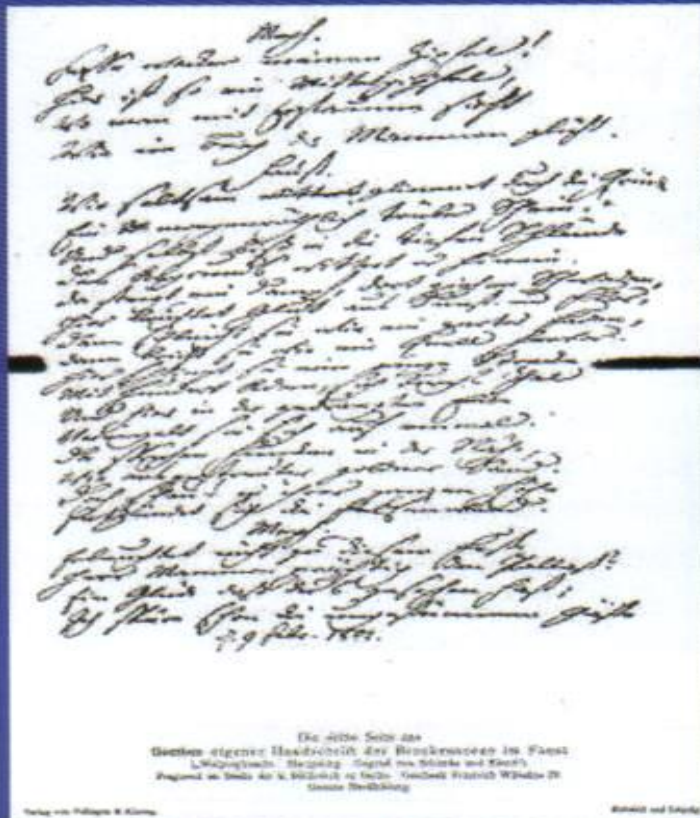
Ernähre dich mit ungemischter Speise,

Leb mit dem Vieh als Vieh, und acht es nicht für Raub,

Den Acker, den du erntest, selbst zu düngen;

Das ist das beste Mittel, glaub,

Auf achtzig Jahr dich zu verjüngen!



Goethes eigene Handschrift im Faust.

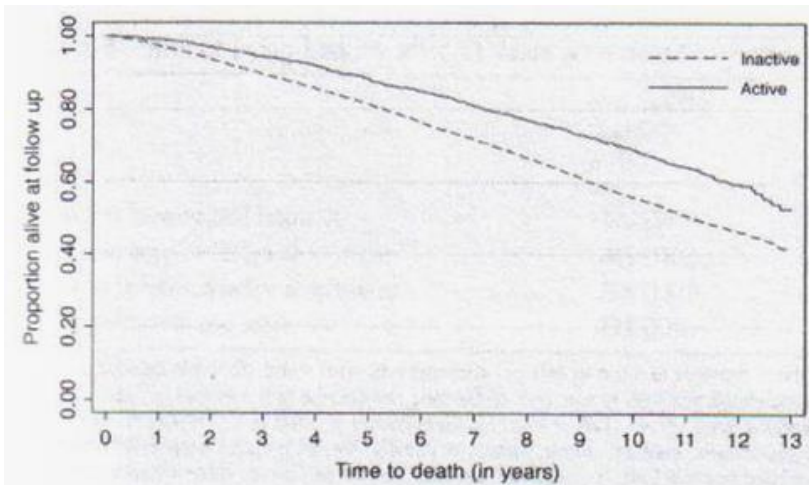
Physical Activity

Psychosomatic effects

- Antidepressive
- Fatigue Syndrom
- Stress
- „Burn out“
- Cognitive function, Demenz, and Alzheimer's disease are prevented , delayed or improved
- Bipolar diseases improved (?)

Vigorous physical activity in older adults

(n = 12201, 65-83 ys.; 11 ys. follow up, Almeida et al., BJSM 2014)



Inactive, baseline and FU= 1

Inactive, active + 30 %

Active and inactive + 0.07

Active and active + 59 %

Active Subjects

Less depression,

Less cognitive impairment,

Less impairment of ADL

Total: 30 % less impairment

+ 11-13 add. ys.

„It is never too late to
become active, enjoy the
health benefits“

Perceived Exertion for Advising Physical Activity (Borg)

- 6
- 7 **sehr, sehr leicht**
- 8
- 9 **sehr leicht**
- 10
- 11 **recht leicht**
- 12
- 13 **etwas anstrengend**
- 14
- 15 **anstrengend**
- 16
- 17 **sehr anstrengend**
- 18
- 19 **sehr, sehr anstrengend**
- 20

• (G. Borg 1967, Löllgen, 2005)

Bewegungsmangel : Sitzende Lebensweise und die Folgen

Ford ES et. al. 2012, Int J Epidem, 11Studien,Meta-Aanlyse

- Probanden verbringen
ca. 4 Std. im Internet, 35 Std. Fernsehen/ Woche, 2 h Video Aufz.
- Autofahren 10.9 %,Büro 9.2 %,TV 8.6 %, andere sitzende Tätigkeiten 5.8 %
- Essen und Gespräche: 3.5.3 bzw. 3.8%

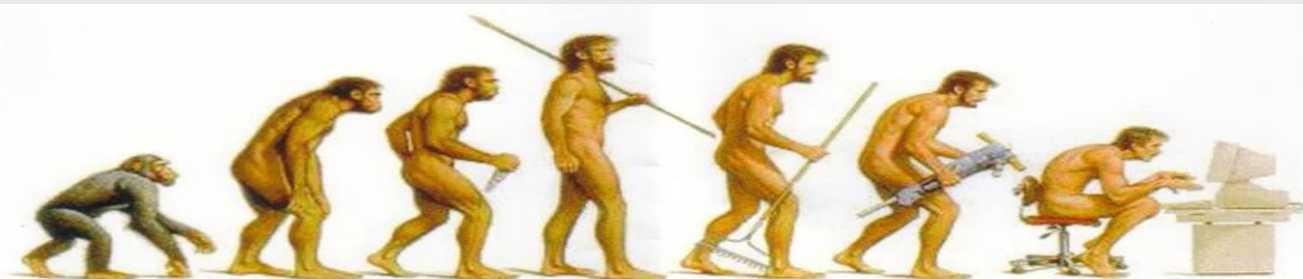
Total 5.5 h /Tag Sitzend und inaktiv,

- Accelerometer sogar : **7.7 h/ Tag**

Mit Schlafen sind die Menschen zu
75 % des Tages „unbeweglich“

Fazit Rel.Risiko (RR) :Das tödliche und nicht
risiko beträgt **1.68** für sitzende Zeiten, **2.25** für Bildschirmzeiten

- **Pro 2h Zunahme Bildschirmzeit : RR 1.17 oder + 17 %**



Age and Functional Capacity or Fitness

Functional capacity means

Cardiorespiratory,


Musculoskeletal and

Mental capacity,

Motor performance (flexibility, balance)

Motivation and activity

in Europe



EXERCISE PRESCRIPTION FOR HEALTH

E.F.S.M.A.

DGSP
Deutsche Gesellschaft für Sportmedizin und Prävention-
Deutscher Sportärztebund

Prescription for Exercise

ENDURANCE TRAINING

.....X/wk, each Min
Training Heart rate:/min
Borg-Value:
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Recommended training:

Slow Walk	Fast Walk	Nordic Walk	Running
Swimming	Cycling	Others	

Ergometer Training:
.....Watt/min for warming upWatt/min..... minutes

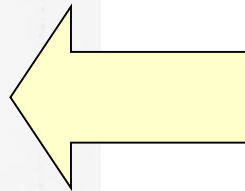
STRENGTH TRAINING

.....% 1RM.....REPsSETS
.....muscle groups

Gymnastics/ Balance/Coordinationwk each.....min
Ball Gameswk each.....min
Others (Golf, Dance,..)wk each.....min

Sport Physician Date:

In case of dyspnoe, irregular heart beats, chest pain or dizziness,
stop activity and counsel your doctor.



DGSP
Deutsche Gesellschaft für Sportmedizin und Prävention-
Deutscher Sportärztebund

Bewegung, Körperliche Aktivität

3 – 5 x pro Woche, 30 – 45 Minuten

Rezept durch den Sportarzt

Exercise Prescription to Promote Physical Activity

- **Exercise prescription for health (EPH)**

Common action of

German Chamber of Physicians, German Fed.
Sports Medicine and German Olympic
Sports Federation

- Distributed now all over **Germany**

and :

Exercise Prescription for Health (EPH)

In all countries of the European Union

(Project :EPH, **Exercise prescription for Health** by EFSMA –
Europ,Fed.Sports Med.)

Exercise Prescription for Health (EPH)

- Physical activity and exercise training is **not yet** part of the draft of preventive law (German Fed Gov).
- **However:**
- **Sedentary lifestyle and inactivity** is, globally, the second most common cause of diseases and premature death, even in the elderly.
- **Why are we sitting around_ and do not change the situation ???**

NIH:

Go4Life

Everyday Fitness
www.nia.nih.gov/Go4Life

EFSMA: X4L

Research on Aging at NIH

Exercise for life

WHO, AHA

Fitting Exercise and Physical Activity into Your Day

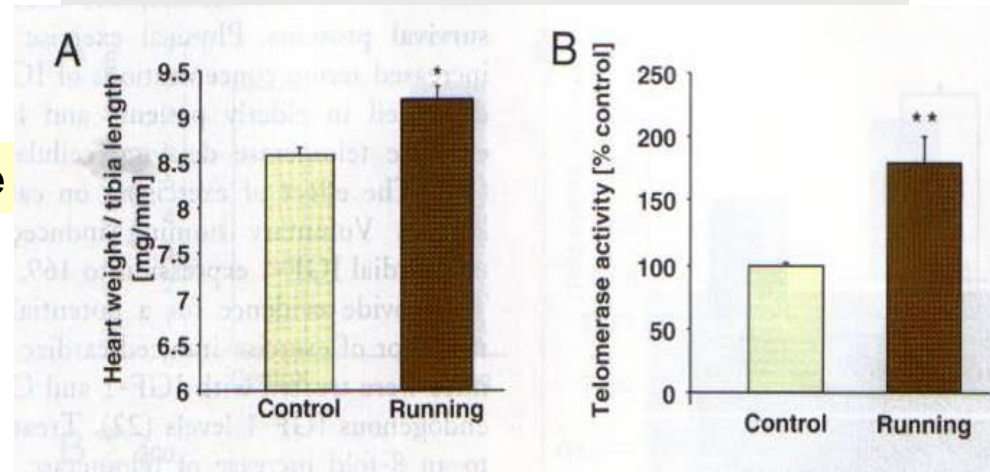
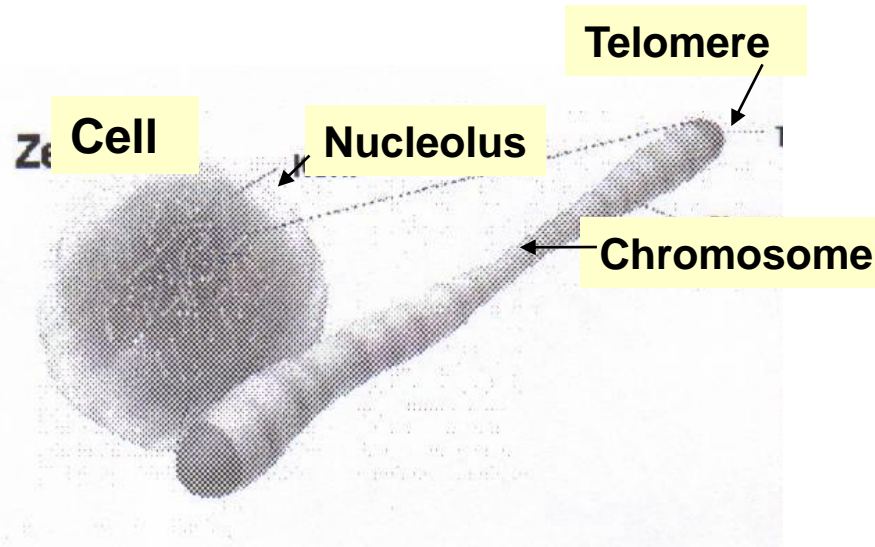
III Recommendations: Prevention and Therapy by Physical Activity in Older Adults (evidence)

- Maintain a physical active lifestyle I (A)
- Moderate endurance training (I A) at least 30 min/ day, 5 times / week (i.e. 150 min /week) (Borg 11-13) or
- Vigororous training at least 20 min/day 3 times/ week , i.e. 75 min./week (Borg 12-15)
- Combination of moderate and vigorous can be performed, (IIaB), with daily light activities
- Muscle strenghtening activities twice a week, (IIaA), 8 – 10 exercises with 10 to 15 repetitions

(AHA,ACSM Recommendations, Nelson,2007,Haskell,2008, and WHO,CDC,DGSP, NIH, HEPA, EFSMA and WHS (?))

Up-regulation of Cardiac Telomere by Physical Activity (Antisenescence and Protective Effects) (Werner et al.)

Exercise regulates cardiac telomere biology



Werner et al., JACC, 2008, 52:470

Trainability in Elderly

- **Regular physical activity is effective** even in the elderly (and essential), evidence of trainability is proven
- Older adults need longer to improve and need regular and continuing activity

Physical Activity is Essential to Healthy Aging (NIH recommendation)

As an older adult, regular physical activity is one of the most important things you can do for your health. It can prevent many of the health problems that seem to come with age. It also helps your muscles grow stronger so you can keep doing your day-to-day activities without becoming dependent on others.

Not doing any physical activity can be bad for you, no matter your age or health condition. Keep in mind, some physical activity is better than none at all. Your health benefits will also increase with the more physical activity that you do.

If you're 65 years of age or older, are generally fit, and have no limiting health conditions you can follow the guidelines listed below.

Successful (Healthy) Aging

(Arch Intern Med,2008) ...

... when mayor chronic disease,cognitive impairment and physically disability are absent

(Sarnak et al.,AIM 2008) and

Longer telomere length is present (Cherkas et al.,AIM,2008)

Exceptional Longevity in Men

Modifiable Factors Associated With Survival and Function to Age 90 Years

Laurel B. Yates, MD, MPH; Luc Djoussé, MD, MPH, DSc; Tobias Kurth, MD, ScD; Julie E. Buring, ScD; J. Michael Gaziano, MD, MPH

Arch Intern Med. 2008;168(3):284-290. (ABSTRACT)