Health promoting hospitals

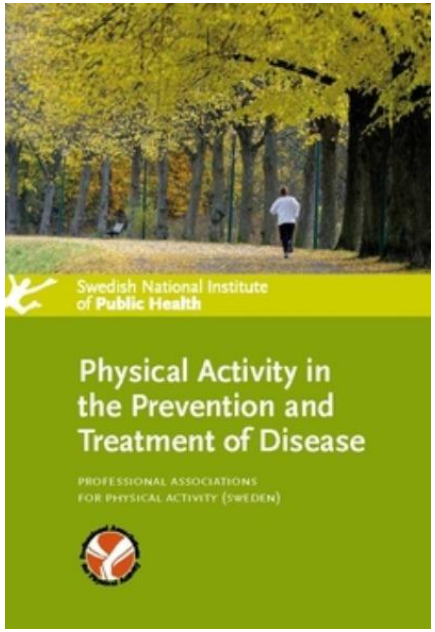
EUROPEAN INITIATIVE FOR EXERCISE IN MEDICINE
REBRANDING MEDICAL COUNSELING FOR HEALTH

Your Prescription for Health
ExeRcise is Medicine
www.ExerciseIsMedicine.org

International Network of
Health
Promoting
Hospitals & Health Services

European Initiative for Exercise in Medicine 3rd Congress

Budapest · Hungary
15th-16th September · 2014



Mats Börjesson,
professor, MD, FESC
Swedish School of Sports and Health Sciences and Dept Cardiology,
Karolinska Univ Hospital,
Stockholm, Sweden

KAROLINSKA UNIVERSITY HOSPITAL

GIH

Swedes used to be active…..

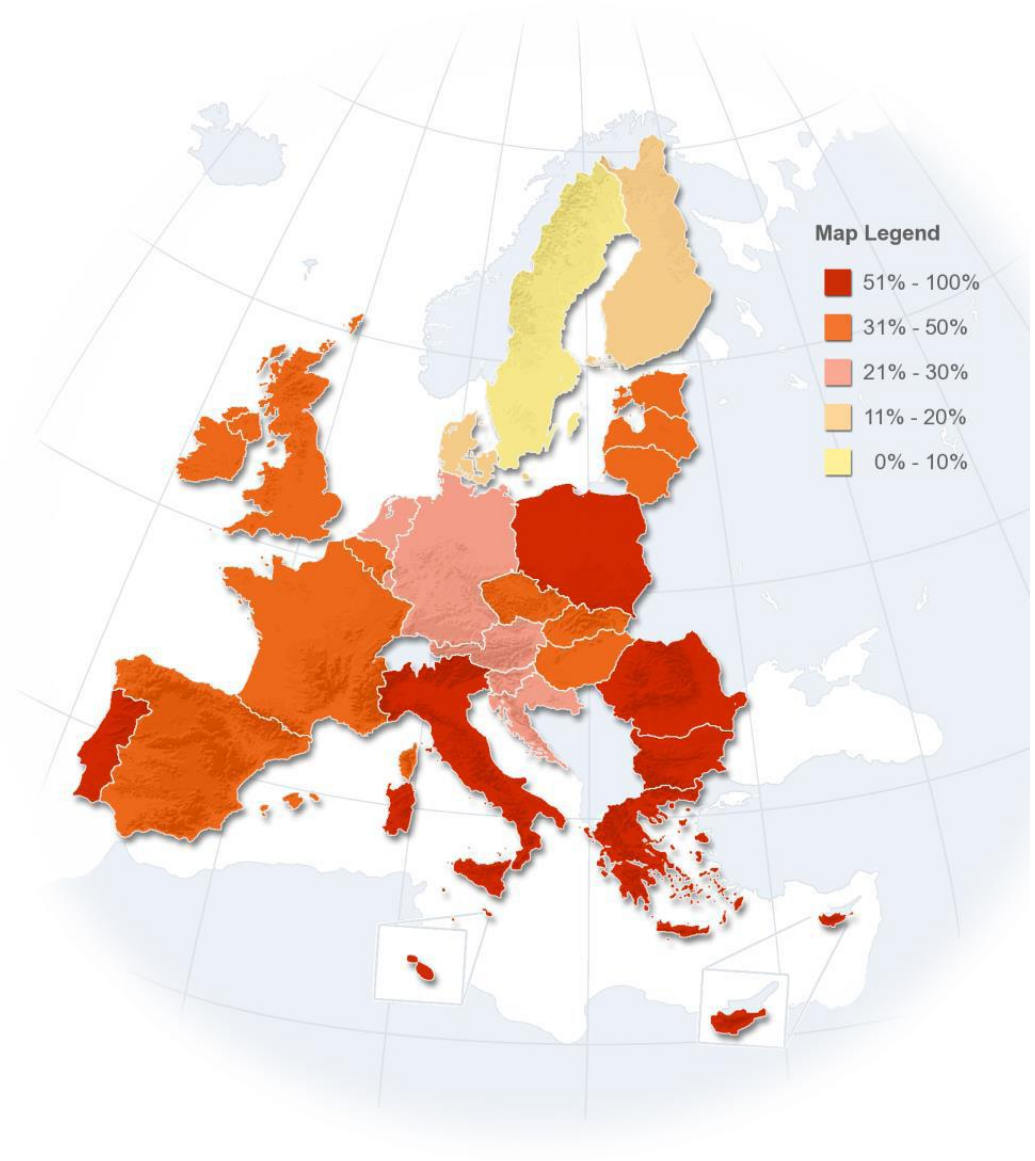
KAROLINSKA UNIVERSITY HOSPITAL

GIH

Question: QD1. How often do you exercise or play sport?

Answers: Never

BG	78%
MT	75%
PT	64%
RO	60%
IT	60%
EL	59%
CY	54%
PL	52%
LT	46%
ES	44%
HU	44%
FR	42%
EU	42%
SK	41%
LV	39%
EE	36%
UK	35%
CZ	35%
IE	34%
BE	31%
HR	29%
NL	29%
DE	29%
LU	29%
AT	27%
SI	22%
FI	15%
DK	14%
SE	9%



Today?

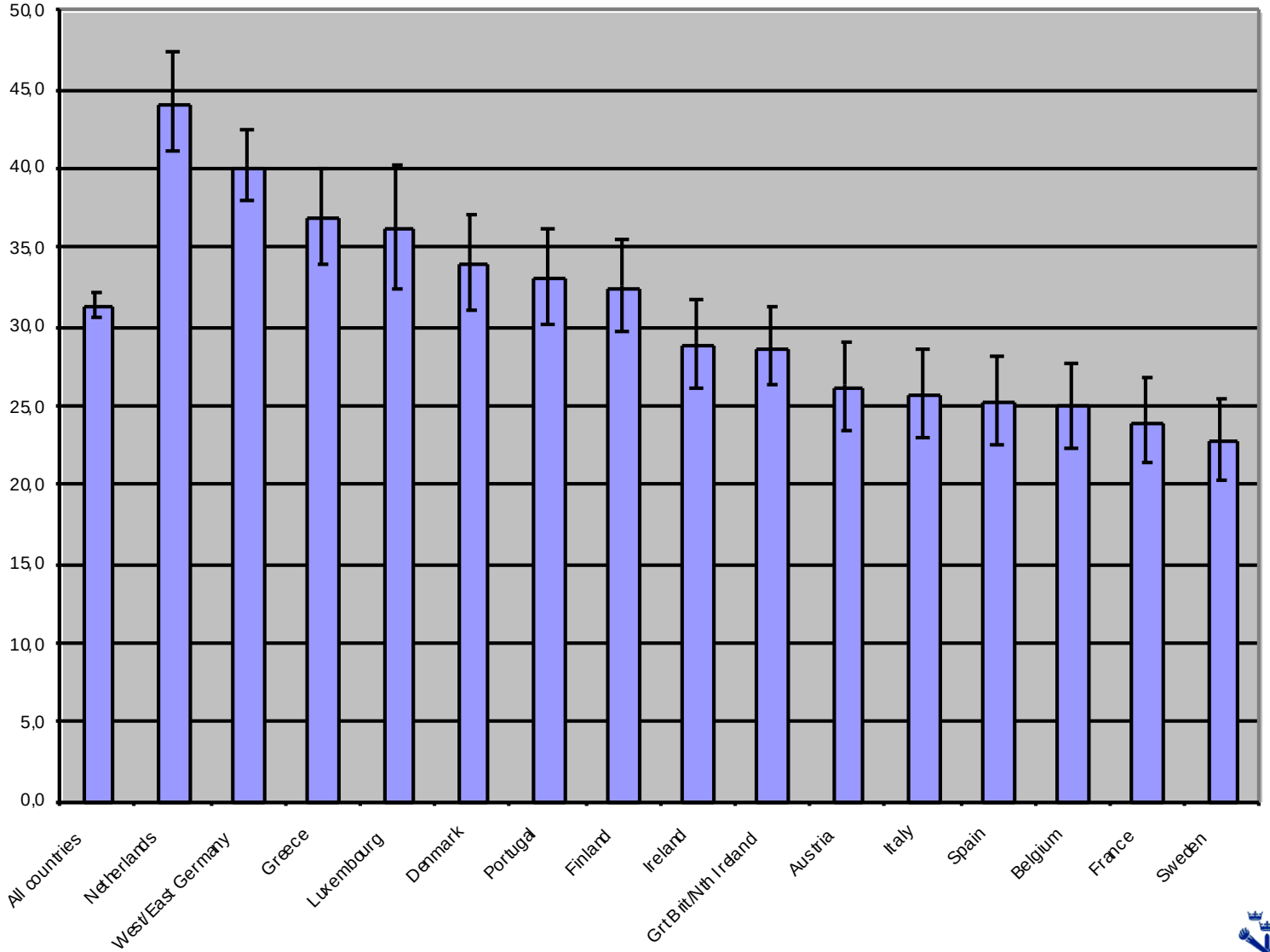
European Commission

Eurobarometer 2014

KAROLINSKA UNIVERSITY HOSPITAL

GIH

But... % sufficiently physically active in Europe (IPAQ) (Euroaspire)



KAROLINSKA UNIVERSITY HOSPITAL

GIH

And we sit the most…

Looking at **country level**, respondents are more likely to spend 2.5 hours or less sitting down in Portugal (33%), Malta (30%), Slovenia (28%), Romania (27%) and Hungary (25%). At the other end of the scale, respondents doing so for more than 8.5 hours are in Denmark (25%), the Netherlands (25%), Sweden (21%), Luxembourg (20%) and the Czech Republic (20%).

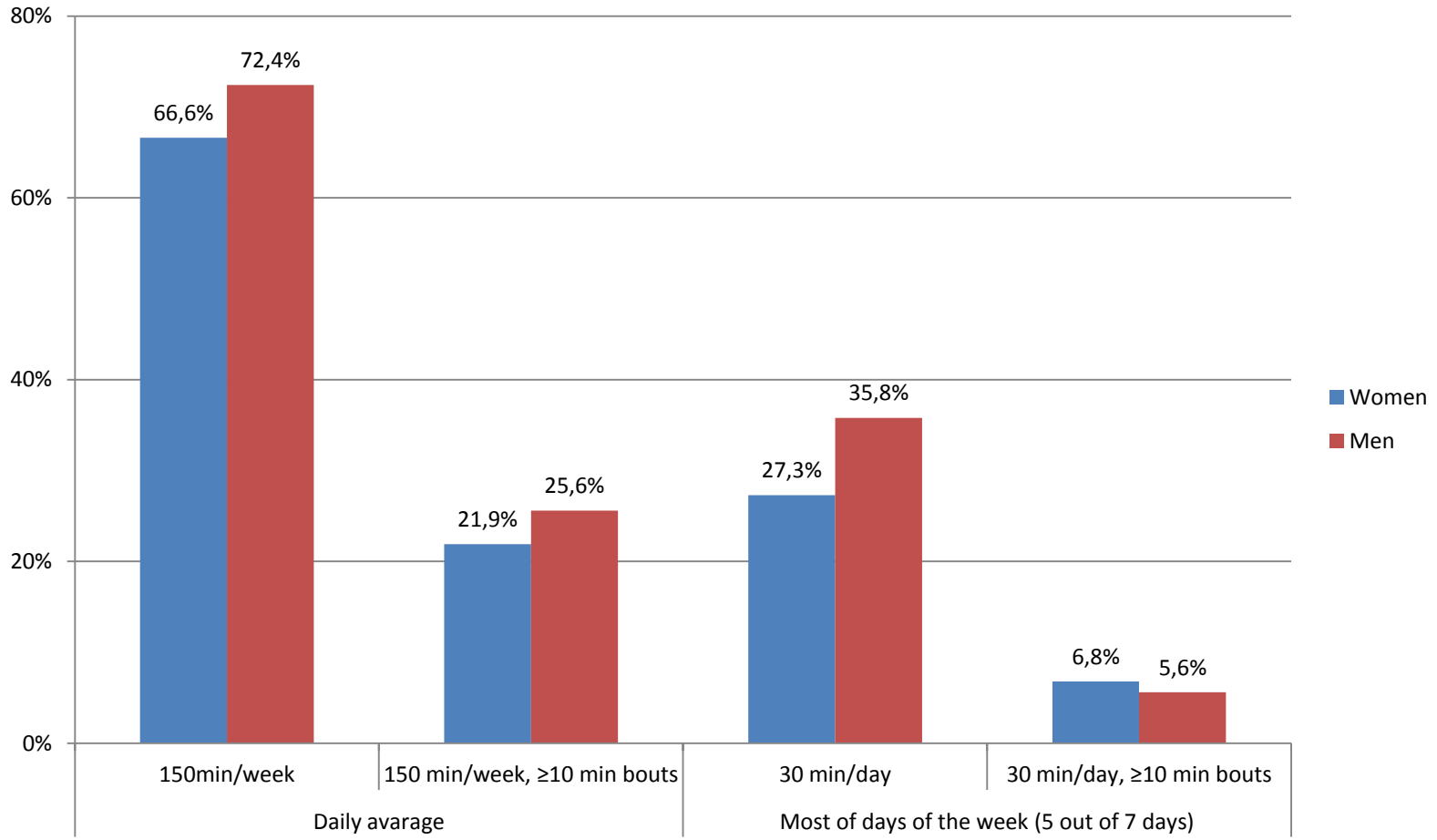
It is notable that in some of the countries where respondents spend a long time sitting down the proportion of citizens who exercise or play sport on a regular basis tends to be high (e.g. Denmark, the Netherlands and Sweden). By contrast, some countries have

Eurobarometer 412- march 2014

KAROLINSKA UNIVERSITY HOSPITAL

GIH

Studies from GIH: 50-65 year olds



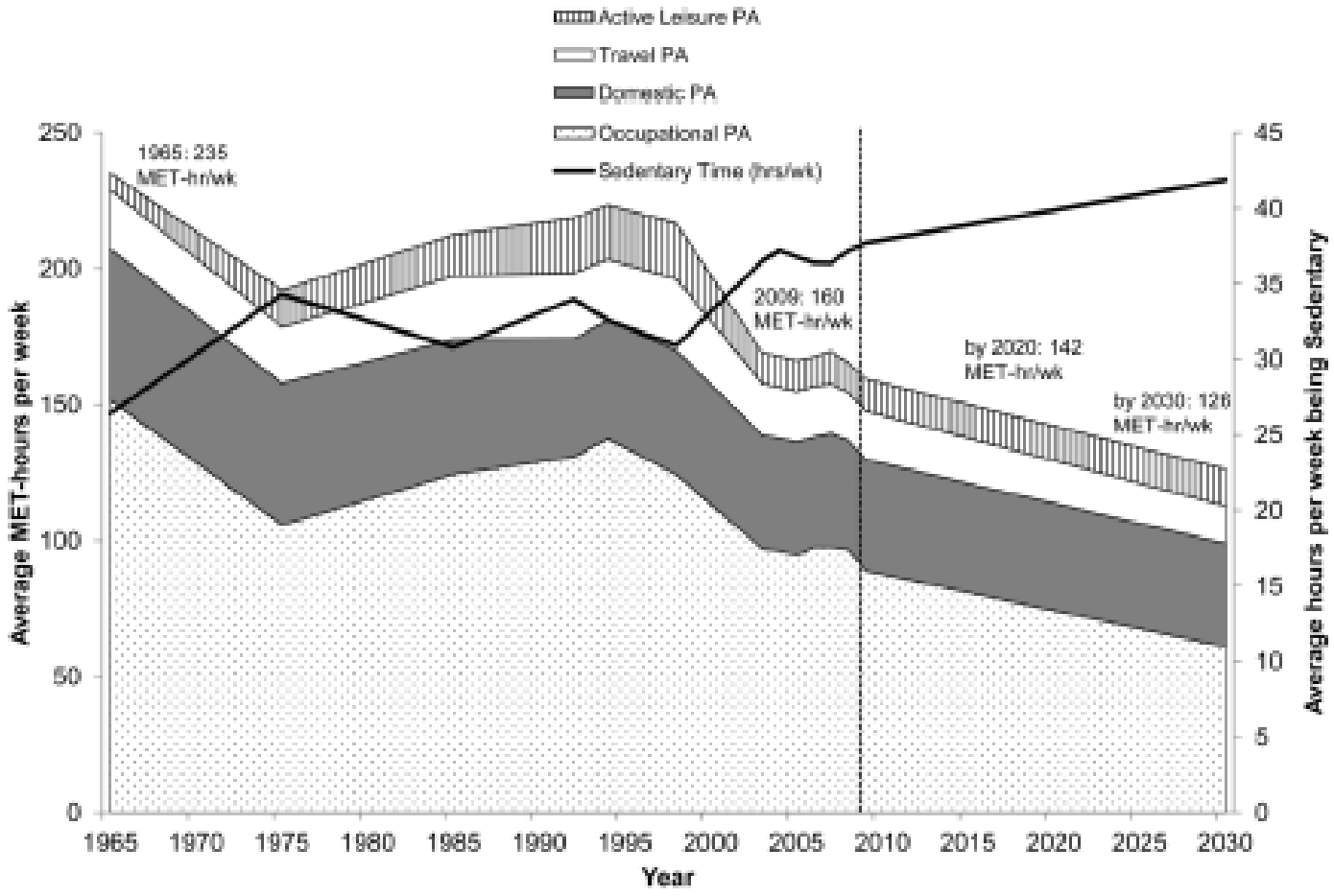
SCAPIS-data (in manuscript)

The future even worse?

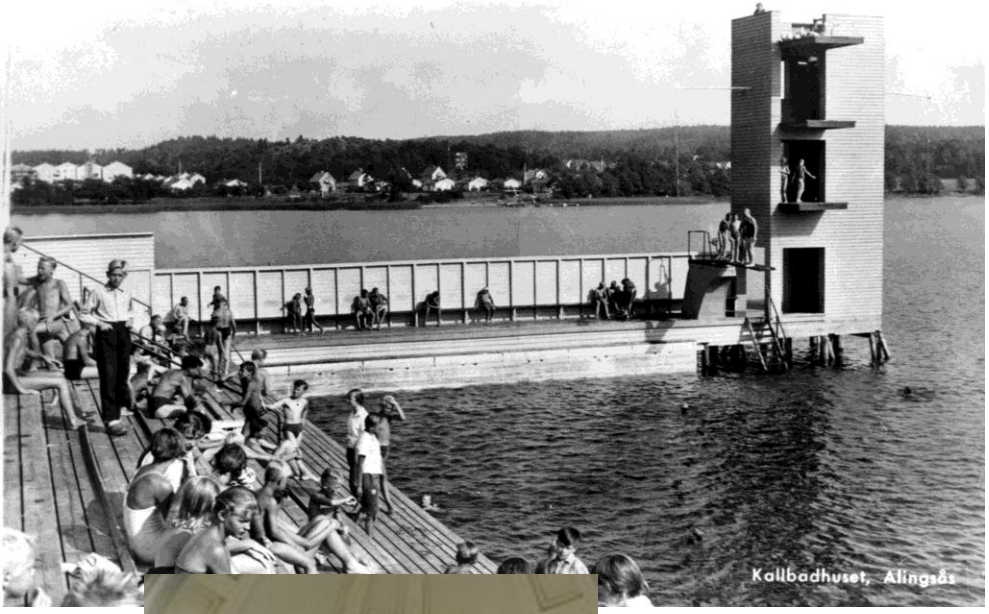
Published in final edited form as:
Obes Rev. 2012 August ; 13(8): 659–680. doi:10.1111/j.1467-789X.2011.00982.x.

Time Use and Physical Activity: A Shift Away from Movement across the Globe

Shu Wen Ng and **Barry Popkin**
Department of Nutrition, University of North Carolina at Chapel Hill



This will have major effects on us…



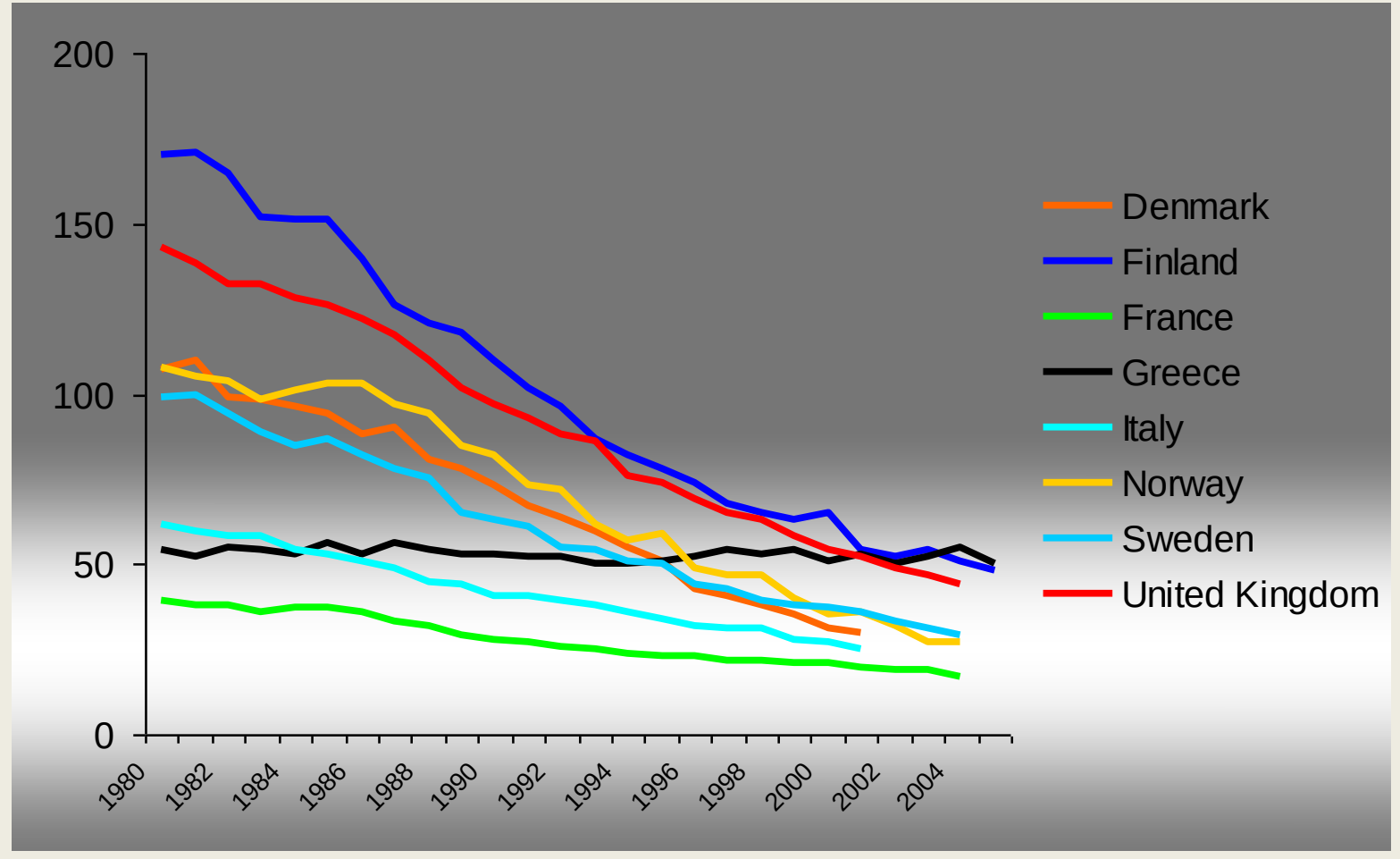
- Mean weight increased 5 kg (men)/ 3.3 kg (women) 2002 (INTERGENE) compared to 1985 (MONICA)
- Biggest increase in BMI, in 25-34 year olds
- 50% overweight and 11-15% obese

(Berg C, Int J Obes 2005)

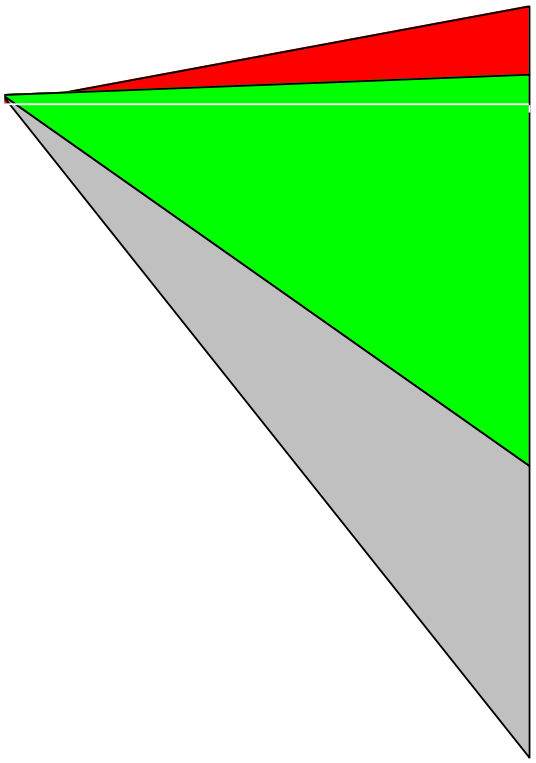
KAROLINSKA UNIVERSITY HOSPITAL

GIH

Trends in CHD mortality in men <65 in western Europe 1980-2006



IMPACT model:
CHD Mortality fall in Sweden 1986-2002
(13 180 fewer deaths in 2002)



Risk Factors worse

- ✓Diabetes (increase) +5%
- ✓Obesity (increase) +2%

Risk Factors better

- ✓Cholesterol -40%
- ✓Smoking -9%
- ✓Population BP fall -7%

Treatments

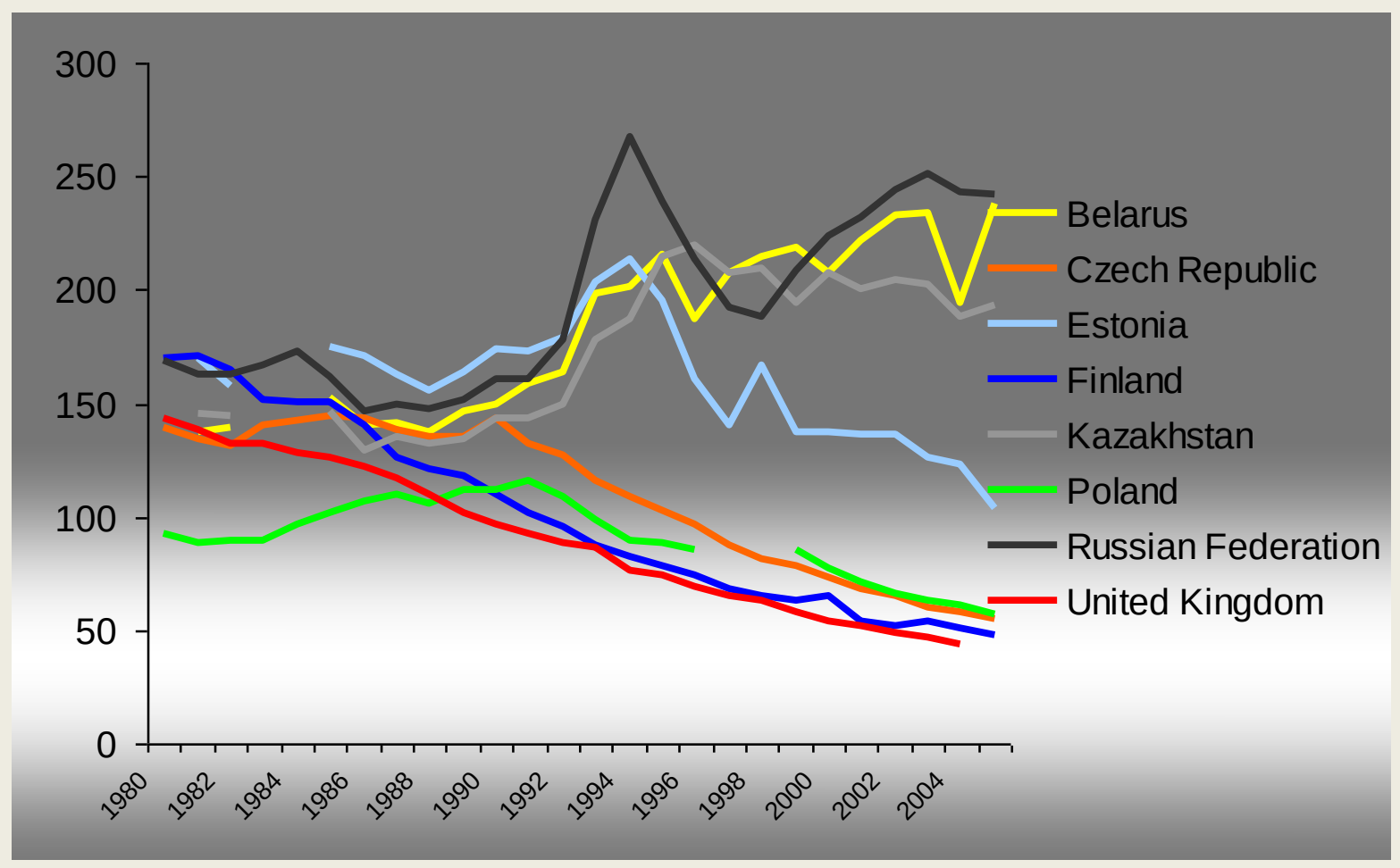
- ✓Acute MI -6%
- ✓Secondary preven -9%

1986

2002

Björck L et al. European Heart J 2009

Trends in CHD mortality in men <65 in eastern Europe 1980-2006



KAROLINSKA UNIVERSITY HOSPITAL

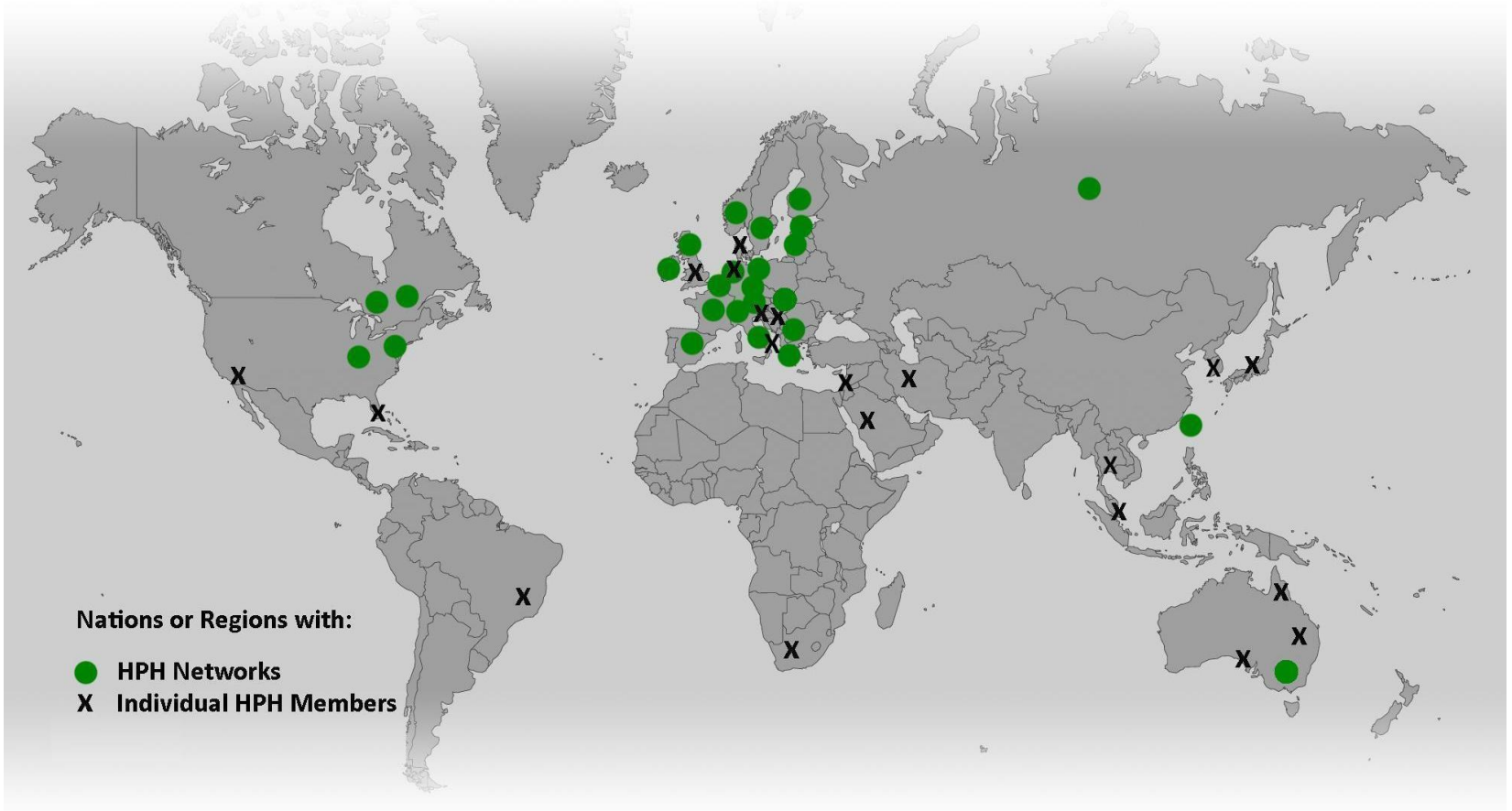
GIH

The challenge

”The translation of health promotion research to practice remains the big challenge” (Glasgow 2007)

KAROLINSKA UNIVERSITY HOSPITAL

GIH



International Network of
Health
Promoting
Hospitals & Health Services

In total:

806 Member Hospitals / Health Services

38 N/R Networks

40 Countries

New Task Force on Physical activity, 2012

KAROLINSKA UNIVERSITY HOSPITAL

GIH

HPH connection to WHO

WHO-centre hosts Intl HPH Secretariat

WHO support countries to:

- Implement WHO principles for health promotion (HP)
- Use HP strategies and standards
- Create further evidence
- Teach and train staff in evidence based HP
- Implement best evidence based practice for HP

KAROLINSKA UNIVERSITY HOSPITAL

GIH

HPH Development

1988 WHO initiative
1989 Model project “Health and Hospital”
1993 European Pilot Hospital Project
1997 European HPH Network

2004 Int. HPH Network and Secretariat
2005 Establishment of General Assembly and Governance Board
2007 Draft HPH Constitution
2008 HPH Constitution coming into effect
2009 HPH Strategy 2009 -2010
2010 HPH WHO MoU

KAROLINSKA UNIVERSITY HOSPITAL

GIH

International HPH Network

Aim: to reorient health care institutions by integrating HP and education, disease prevention and rehabilitation
(Ottawa Charter 1986, and Vienna Rec. 1997)

Goal: Better health gain by integrating HP

Focus: Patients, staff, community and environment

Members: Hospitals and Health Services (incl. primary care)

Evidence-Based Platform: Health Promotion should be based on evidence rather than ideology
(Gro Harlem Brundtland, WHO, 2000)

HPH Working Groups

* HP for Staff and a Healthy Workplace
- Patient Safety
- Scientific Journal of Clinical HP
- HP in Non-Hospital Organizations

KAROLINSKA UNIVERSITY HOSPITAL

GIH

HPH Task Forces

- Migrant-Friendly & Culturally Competent Health (IT)
- HP for Children & Adolescents in & by Hosp (IT/PT)
- Psychiatric Services (D)
- Tobacco-free United (D)
  (incl. ENSH participation)
- EB Alcohol intervention in H&HS (N)
- HPH and the Environment (ROC) (incl. HCWH and WHO)
- Physical activity

KAROLINSKA UNIVERSITY HOSPITAL

GIH

Task Force on physical activity

- The main target is hospitals and health care settings
- Implementation of physical activity in health care
- ”Guidebook” on PA, is planned for 2014-15

Themes include: Barriers to implementation, health economy, physical activity assessment in health care, physical activity on prescription, positive examples

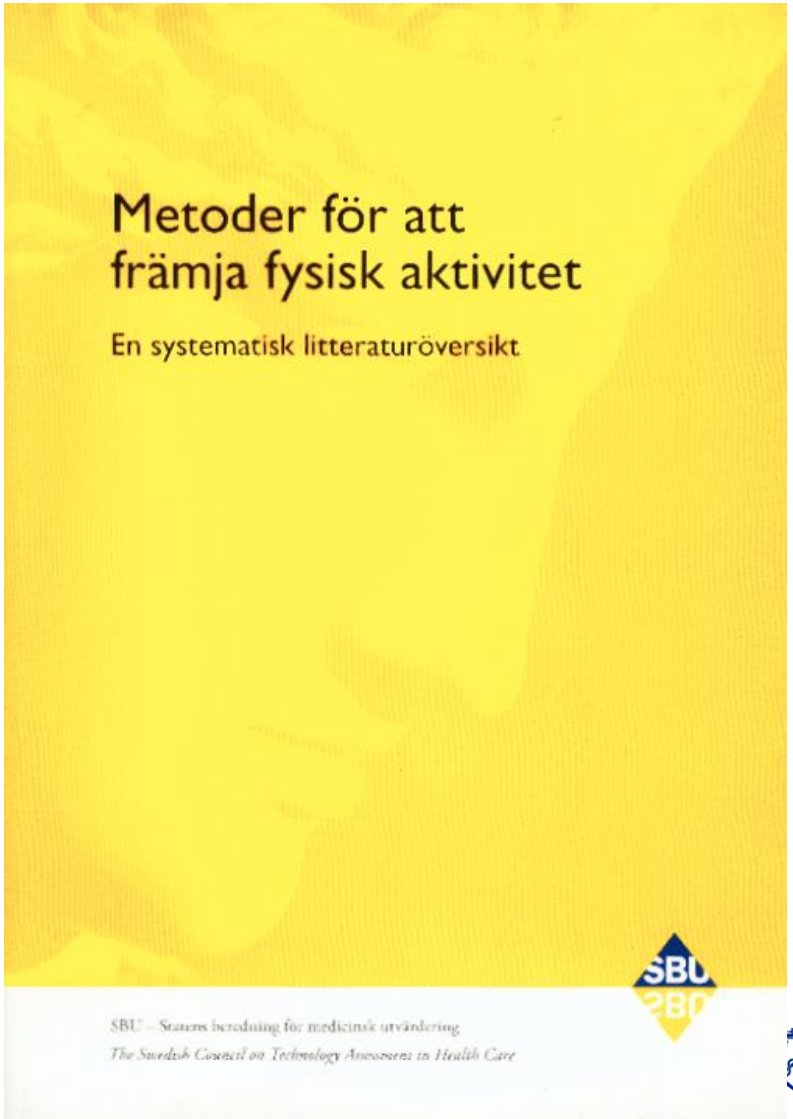
KAROLINSKA UNIVERSITY HOSPITAL

GIH

The Swedish Council on Technology Assessment in Health Care report, (2007)

- ”Methods of promoting Physical activity”:

* General advice
-increase PA 12-50% in 6m
* More intense counselling over months- more effect
* Advice with additional support (pedometers, written advice, follow-ups)
-increase PA 15-50% in 6m



KAROLINSKA UNIVERSITY HOSPITAL

GIH

General advice on PA

- Physicians believe this is important
  - -Swedish survey of GPs 2006 (Weinehall 2006)
  - -but doctors think the patients is not always interested
- The patients do not think we provide this
- So it is still underutilized…
  - -Only 50% of GPs give counselling (Brotons 200
  - -US: 20% of consultations resulted in PA advice (Anis 2004)
  - -34% report given advice at last doctor´s visit (Wee 1999)

PA advice with additional support

- Written advice
- Step-counters (pedometers)
- Physical activity diaries
- Information brochures
- Follow-ups

Only 40% of patients receiving oral advice were also given a plan for PA or follow-up (Glasgow 2001)

Exercise prescription?

*Counselling by the health care professional

*Resulting in an individualised prescription

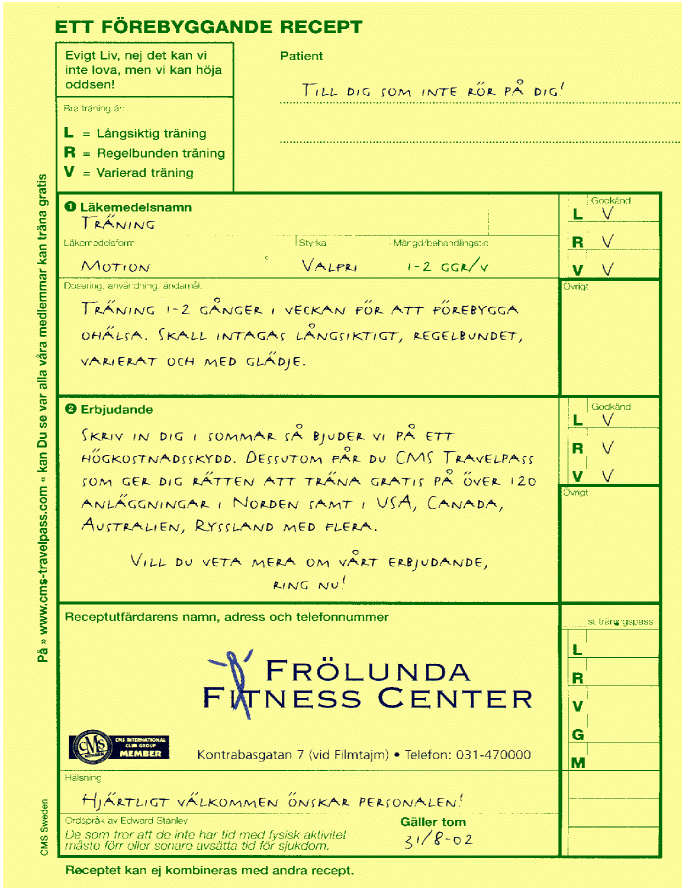
*Obs! The extent of the intervention varies greatly

-who gives advice?

-written prescriptions?

-the PA prescribed

-use of additional support



ETT FÖREBYGGANDE RECEPT

Evigt Liv, nej det kan vi inte lova, men vi kan höja oddsen!

Patient

TILL DIG SOM INTE RÖR PÅ DIG!

Rätt träning är:

L = Långsiktig träning
R = Regelbunden träning
V = Varierad träning

❶ Läkemedelsnamn
TRÄNING

Läkemedelsform: MOTION | Styrka: VALFRI | Mängd/behandlingstid: 1-2 GGR/V

Dosering, användning, användare:
TRÄNING 1-2 GÅNGER I VECKAN FÖR ATT FÖREBYGGA OHÄLSA. SKALL INTAGAS LÅNGSIKTIGT, REGELBUNDET, VARIERAT OCH MED GLÄDJE.

Godkänd: L V | R V | V V

Övrigt:

❷ Erbjudande
SKRIV IN DIG I SOMMAR SÅ BJUDER VI PÅ ETT HÖGKOSTNADSSKYDD. DESSUTOM FÅR DU CMS TRAVELPASS SOM GER DIG RÄTTEN ATT TRÄNA GRATIS PÅ ÖVER 120 ANLÄGGNINGAR I NORDEN SAMT I USA, CANADA, AUSTRALIEN, RYSSLAND MED FLERA.

VILL DU VETA MERA OM VÅRT ERBJUDANDE, RING NU!

Godkänd: L V | R V | V V

Övrigt

Receptutfärdarens namn, adress och telefonnummer

FRÖLUNDA FITNESS CENTER

CMS INTERNATIONAL CLUB GROUP MEMBER

Kontrabasgatan 7 (vid Filmtajm) • Telefon: 031-470000

Hälsning
HJÄRTLIGT VÄLKOMMEN ÖNSKAR PERSONALEN!

Ordspråk av Edward Stanley
De som tror att de inte har tid med fysisk aktivitet måste förr eller senare avsätta tid för sjukdom.

Gäller tom
31/8-02

Receptet kan ej kombineras med andra recept.

På » www.cms-travelpass.com » kan Du se var alla medlemmar kan träna gratis

CMS Sweden

In Sweden, Australia, N Zeeland, Finland etc

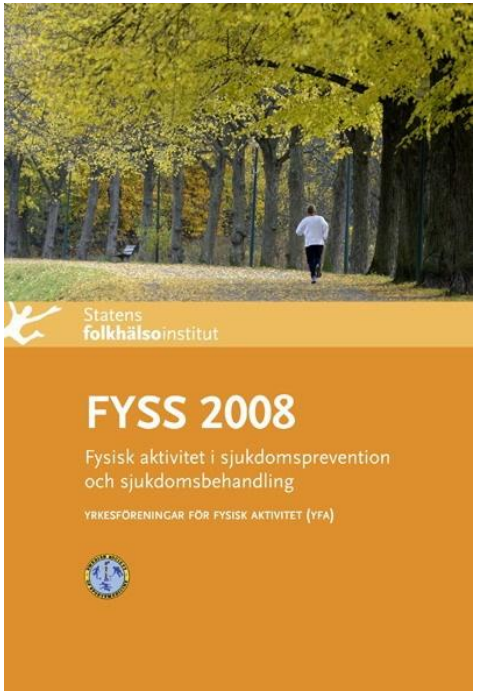
KAROLINSKA UNIVERSITY HOSPITAL

GIH

All PAP is not the same

- The are many different models of PAP (physical activity on prescription)
- A common model (Denmark, UK) has involved the referral of a patient to a training programme, for a period of time
- The Swedish model involves individualised written prescription, the actual activity takes place outside the health care setting, with additional help and mandatory follow-up

The Swedish model- using the FYSS book



- Indication
- Mode of action
- Dosage

  (type of activity, intensity, frequency)
- Side-effects
- Contra-indications

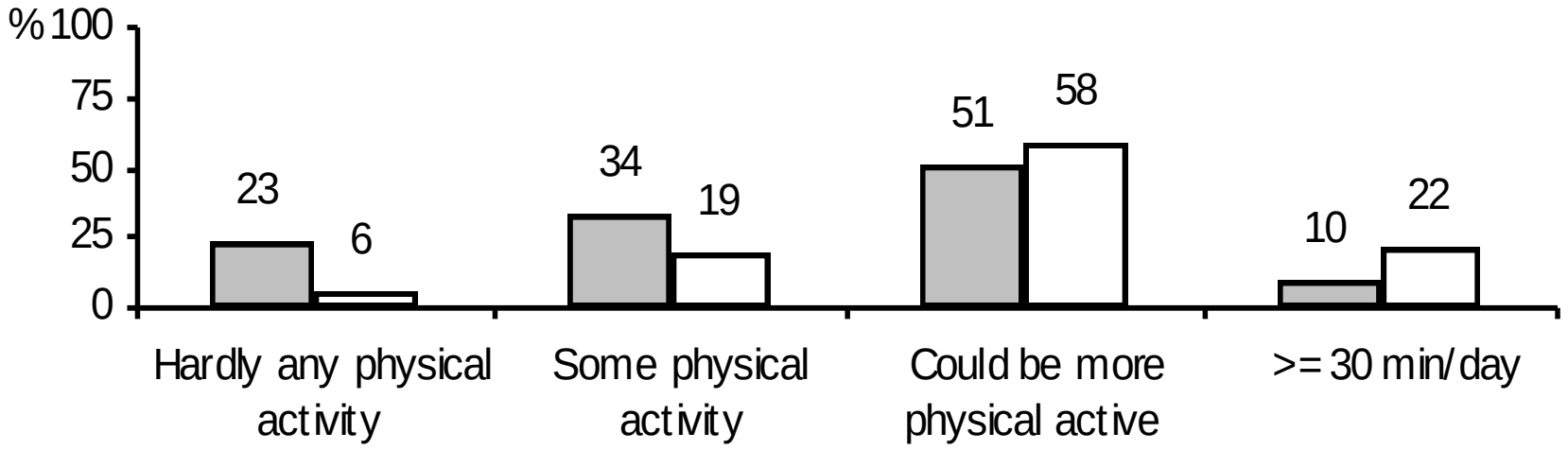
www.fyss.se

KAROLINSKA UNIVERSITY HOSPITAL

GIH

Kallings LV, Sc J Med Sci Sports 2008

- Total physical activity (during the last 12 months, from baseline to 6-month follow-up)



KAROLINSKA UNIVERSITY HOSPITAL

GIH

Kallings LV, J Phys Act Health 2009

Self-reported adherence to Prescription:

65% at 6 months

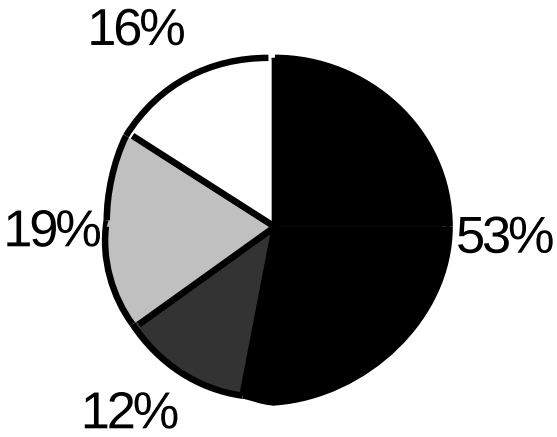


Figure 4.10. Adherence to prescribed physical activity on prescription (Paper II) after 6-month (n=240): 53% adhered fully (■), 12% adhered but altered type of physical activity (■), partial adherence (■) was reported by 19%, and 16% reported total non-adherence (□).

Eur J Cardiov Prev Rehab 2009: Kallings et al.
RCT: Body composition/ cardiometab risk factors

(6/23 signifikant skillnad)

Variable	Intervention group (n=41)		Control group (n=50)		p-value§
	Mean (SD)	95% CI	Mean (SD)	95% CI	
Weight (kg)	-1.8 (0.5)	-2.8 to -0.8	-0.5 (0.3)	-1.1 to 0.1	0.023
BMI (weight/height^2)	-0.6 (0.2)	-0.9 to -0.3	-0.2 (0.1)	-0. 4 to 0.0	0.023
Waist circumference (cm)	-2.3 (0.6)	-3.5 to -1.1	-1.4 (0.4)	-2.2 to -0.6	0.20
SAD (cm)	-1.5 (0.3)	-2.1 to -0.9	-0.9 (0.3)	-1.5 to -0.3	0.16
Neck circumference (cm)	-1.2 (0.2)	-1.6 to -0.8	-0.6 (0.2)	-1.0 to -0.2	0.019
Body fat (%)	-1.2 (0.4)	-2.0 to -0.5	-0.5 (0.2)	-1.0 to -0.0	0.09
Fat mass (kg)	-1.7 (0.4)	-2.5 to -0.9	-0.6 (0.3)	-1.2 to -0.1	0.032
Fat free mass (kg)	-0.2 (0.3)	-0.8 to 0.4	0.2 (0.2)	-0.3 to 0.7	0.29
Body fat in trunk (%)	-1.2 (0.5)	-2.1 to -0.3	-0.4 (0.3)	-1.1 to 0.2	0.18
Fat mass in trunk (kg)	-0.9 (0.3)	-1.4 to -0.3	-0.3 (0.2)	-0.7 to 0.1	0.11
Fat free mass in trunk (kg)	-0.1 (0.2)	-0.4 to 0.3	0.1 (0.2)	-0.2 to 0.4	0.42
Systolic blood pressure (mmHg)	0.2 (2.2)	-4.3 to 4.7	-4.1 (1.7)	-7.5 to -0.6	0.12
Diastolic blood pressure (mmHg)	-1.0 (1.3)	-3.5 to 1.6	-1.7 (1.3)	-4.4 to 0.9	0.68
Glucose (mmol/l)	-0.2 (0.1)	-0.3 to -0.1	-0.1 (0.1)	-0.2 to -0.0	0.48
HbA1c (% of totHb)	-0.1 (0.1)	-0.2 to 0.0	0.2 (0.0)	0.1 to 0.3	0.001
Cholesterol (mmol/l)	-0.3 (0.2)	-0.6 to 0.0	0.1 (0.1)	-0.1 to 0.1	0.042
Triglycerides (mmol/l)	-0.2 (0.1)	-0.3 to -0.0	-0.0 (0.1)	-0.1 to 0.1	0.08
HDL (mmol/l)	0.0 (0-0)	-0.1 to 0.1	-0.0 (0.0)	-0.1 to 0.1	0.75
LDL (mmol/l)	-0.1 (0.1)	-0.2 to 0.1	0.1 (0.1)	-0.1 to 0.3	0.13
LDL/HDL	-0.1 (0.1)	-0.2 to 0.1	0.1 (0.1)	-0.0 to 0.2	0.07
ApoA1 (g/l)	0.01 (0.02)	-0.04 to 0.05	0.01 (0.02)	-0.04 to 0.06	0.89
ApoB (g/l)	-0.11 (0.03)	-0.18 to -0.05	-0.07 (0.02)	-0.11 to -0.04	0.25
ApoB/ApoA1	-0.09 (0.03)	-0.14 to -0.04	-0.06 (0.02)	-0.09 to -0.03	0.31

KAROLINSKA UNIVERSITY HOSPITAL

GIH

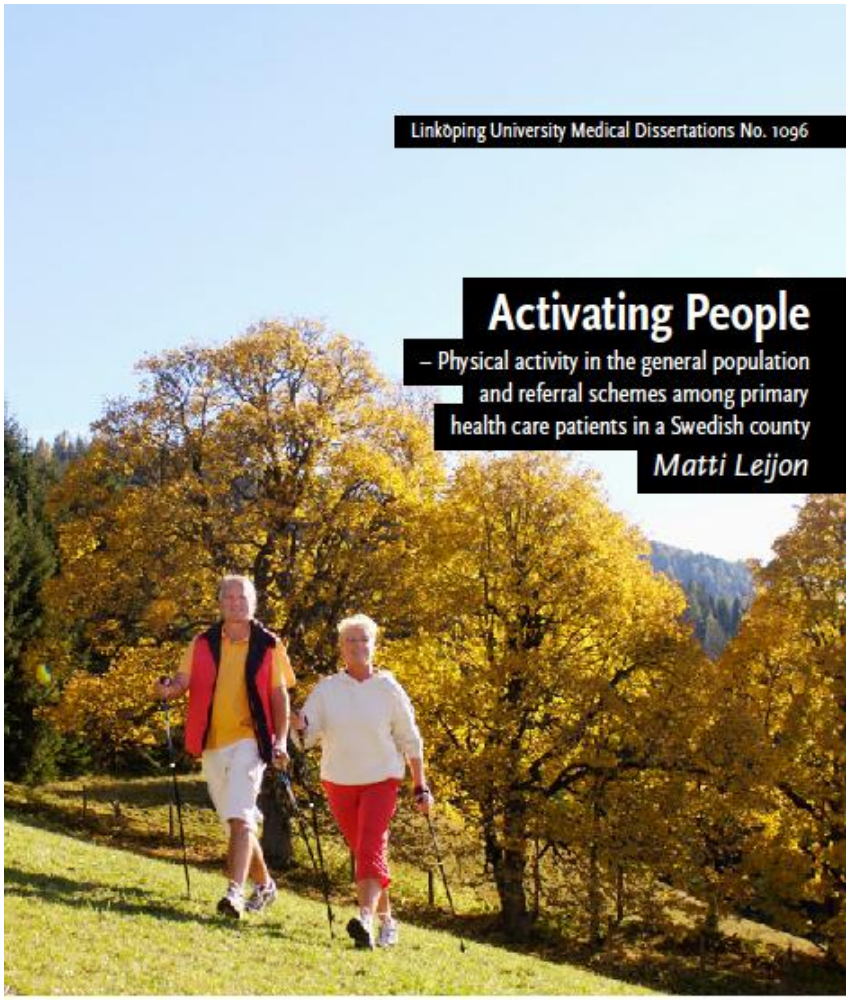
Thesis: Matti Leijon, 2009, Linköpings University

1. Physical activity referrals in Swedish primary health care – prescriber and patient characteristics, reasons for prescriptions, and prescribed activities.

2. Does a physical activity referral scheme improve the physical activity among routine primary health care patients?
   -12 month follow-up!
   (Leijon M, Scand J Med Sci Sports 2009)

3. Factors associated with self-reported adherence to prescribed physical activity in routine primary health care.

4. Is there a demand for physical activity interventions from health-care providers? Findings from a population survey.



Se sidan 3

KAROLINSKA UNIVERSITY HOSPITAL

Paper 1- Questionnaire

- 28% says that physical activity is the most imortant life-style factor to change ”right now”
  - 24% want to loose weight, 16% to eat healthier, 6% to stop tobacco use, 2% wants to lower alcohol consumption, all others do not want to change

- The personal responsibility for being physically active is big (93-99%)
  - But 76% thinks that the health care system has a responsibility to help patients to increase their level of PA!

Se sidan 49

Swedish long-term study (Kuopio 140625)

Implementing Physical Activity on Prescription in primary care

Stefan Lundqvist[1], Mats Börjesson[2], Maria EH Larsson[3], Lars Hagberg[4], Åsa Cider[3]. **1** Primary health care, Gothenburg. **2** Karolinska University Hospital, Stockholm. **3** Institution of Neuroscience and Physiology/Physiotherapy, Gothenburg University, Gothenburg. **4** Örebro County Council, Department of Public Health, Örebro, Sweden. **E-mail:** stefan.lundqvist@vgregion.se

Conclusions

The study identifies improvements in metabolic risk factors and self-reported quality of life, in responders to Physical Activity on Prescription (PAP).

PAP is associated with an increased physical activity level at 6-month follow-up.

Objectives

To evaluate PAP in an out patient clinic in the primary health care in Sweden, and compare responders to non-responders to PAP.

Methods

A total of 194 patients were included in the study. Inclusion criteria:

- 30–80 years
- Physically inactive
- At least one component of the metabolic syndrome.

The patients were offered PAP including:

- Individualised dialogue
- Prescribed physical activity
- 1–2 follow-ups during a 6-month period.

Results

76% (n=148) completed the 6-month follow-up:

- 75% (n=111) had increased their physical activity level
- 43% (n=64) had moved from inadequately to sufficiently physically active
- Significant improvements were found in waist circumference, fasting plasma glucose, HDL and SF-36 "vitality".

A sub-group analysis comparing responders (n=64) to non-responders (n=36):

- Significant improvements were found in BMI, triglycerides and SF-36 "role limitation physical", "general health", "vitality", "mental health" and "mental component summary" in the responder-group.

UNIVERSITY OF GOTHENBURG

FaR fysisk aktivitet på recept centrala & västra göteborg

VÄSTRA GÖTALANDSREGIONEN

Activity promotion in hospitals

- Now a primary goal nationally
- The key to success! (also in primary care)
- 85% of prescriptions initiated in the hospital setting by ”the specialists” will be itirated in primary care

PA promotion in hospital setting

- Different challenge and barriers:

  -tradition ”we treat pats!” (prev is for someone else..). Doctors big barrier

  -patients may stay a short time

  -logistical (organization of out-patients, transfer to primary care…)

  -lack of high quality studies

European Journal of Preventive Cardiology

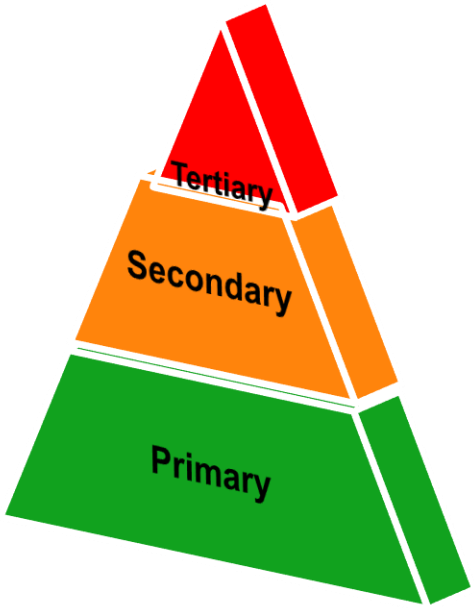
Review

Importance of characteristics and modalities of physical activity and exercise in defining the benefits to cardiovascular health within the general population: recommendations from the EACPR (Part I)

L Vanhees[1], J De Sutter[2], N Geladas[3], F Doyle[4], E Prescott[5], V Cornelissen[1], E Kouidi[6], D Dugmore[7], D Vanuzzo[8], M Börjesson[9], P Doherty[10] (on behalf of the writing group of the EACPR)

European Journal of Preventive Cardiology
0(00) 1–17

DOI: 10.1177/2047487312437059
ejpc.sagepub.com
SAGE



European Journal of Cardiovascular Prevention & Rehabilitation

Review

Importance of characteristics and modalities of physical activity and exercise in the management of cardiovascular health in individuals with cardiovascular risk factors: recommendations from the EACPR (Part II)

L Vanhees[1], N Geladas[2], D Hansen[3], E Kouidi[4], J Niebauer[5], Ž Reiner[6], V Cornelissen[1], S Adamopoulos[7], E Prescott[8] and M Börjesson[9] (on behalf of the writing group)

European Journal of Cardiovascular Prevention & Rehabilitation
0(00) 1–29

DOI: 10.1177/1741826711430926
ejcpr.sagepub.com
SAGE

Different approaches

European Journal of Preventive Cardiology

Review

Importance of characteristics and modalities of physical activity and exercise in the management of cardiovascular health in individuals with cardiovascular disease (Part III)

L Vanhees[1], B Rauch[2], M Piepoli[3], F van Buuren[4], T Takken[5], M Börjesson[6], B Bjarnason-Wehrens[7], P Doherty[8], D Dugmore[9] and M Halle[10] (on behalf of the writing group of the EACPR)

European Journal of Preventive Cardiology
0(00) 1–24

DOI: 10.1177/2047487312437063
ejpc.sagepub.com
SAGE

KAROLINSKA UNIVERSITY HOSPITAL

GIH

What about higher intensities?

Comparison of Cardioprotective Benefits of Vigorous Versus Moderate Intensity Aerobic Exercise

David P. Swain, PhD[a,*] and Barry A. Franklin, PhD[b]

Aerobic fitness, not merely physical activity, is associated with a reduced risk of cardiovascular disease. Vigorous intensity exercise has been shown to increase aerobic fitness more effectively than moderate intensity exercise, suggesting that the former may confer greater cardioprotective benefits. An electronic search of published studies using PubMed was conducted for 2 types of investigations, epidemiologic studies that evaluated the benefits of physical activity of varying intensity levels and clinical trials that trained individuals at different intensities of exercise while controlling for the total energy expenditure. A secondary search was conducted using the references from these studies. The epidemiologic studies consistently found a greater reduction in risk of cardiovascular disease with vigorous (typically ≥6 METs) than with moderate intensity physical activity and reported more favorable risk profiles for individuals engaged in vigorous, as opposed to moderate, intensity physical activity. Clinical trials generally reported greater improvements after vigorous (typically ≥60% aerobic capacity) compared with moderate intensity exercise for diastolic blood pressure, glucose control, and aerobic capacity, but reported no intensity effect on improvements in systolic blood pressure, lipid profile, or body fat loss. In conclusion, if the total energy expenditure of exercise is held constant, exercise performed at a vigorous intensity appears to convey greater cardioprotective benefits than exercise of a moderate intensity. (Am J Cardiol 2006;97:141–147)

KAROLINSKA UNIVERSITY HOSPITAL

GIH

The 6-minute Workout ~ High Intensity Training

EQUIPMENT NEEDED: Exercise Bike

2 MINUTES	**WARM-UP**	Cycle gently.
20 SECONDS	**FULL THROTTLE**	Pedal as hard and as fast as you can!
1.5 MINUTES	**REST**	Continue to cycle gently.
20 SECONDS	**FULL THROTTLE**	Pedal hard again!
1.5 MINUTES	**REST**	Cycle gently.
20 SECONDS	**FULL THROTTLE**	Pedal hard. (Last time!)
	END	Breathe deeply. You've done well!

Demonstrated Benefits:

- 24% average improvement in insulin sensitivity in study participants (Reduced risk of diabetes and other metabolic diseases)
- Significantly increased aerobic fitness in 80% of participants (For improved circulation and a healthier heart and lungs)

KAROLINSKA UNIVERSITY HOSPITAL

GIH

It could be more effective

Box 1 Adaptations occurring significantly more with HIIT compared to MICT

- ↑VO_2peak
- ↓Systolic and diastolic blood pressure
- ↑High density lipoproteins
- ↓Triglycerides and fasting glucose
- ↓Oxidative stress and inflammation
- ↓FATP-1 and FAS
- ↑Adiponectin, insulin sensitivity and β-cell function
- ↑PGC-1α
- ↑Maximal rate of Ca^{2+} reuptake
- ↑Availability of nitric oxide
- ↑Cardiac function
- ↑Enjoyment of exercise
- ↑Quality of life

FATP-1, fatty acid transport protein 1; FAS, fatty acid synthase; HIIT, high-intensity interval training; MICT, moderate-intensity continuous training

Ref: Weston KS, BJSM,Publ online 2013

KAROLINSKA UNIVERSITY HOSPITAL

GIH

Not all studies positive…

Buchan *et al. BMC Public Health* 2013, **13**:498
http://www.biomedcentral.com/1471-2458/13/498

BMC Public Health

RESEARCH ARTICLE Open Access

High intensity interval running enhances measures of physical fitness but not metabolic measures of cardiovascular disease risk in healthy adolescents

Duncan S Buchan[1*], Stewart Ollis[1], John D Young[1], Stephen-Mark Cooper[2], Julian PH Shield[3] and Julien S Baker[1]

Clin Physiol Funct Imaging (2014) 34, pp138–142 doi: 10.1111/cpf.12076

Does aerobic exercise intensity affect health-related parameters in overweight women?

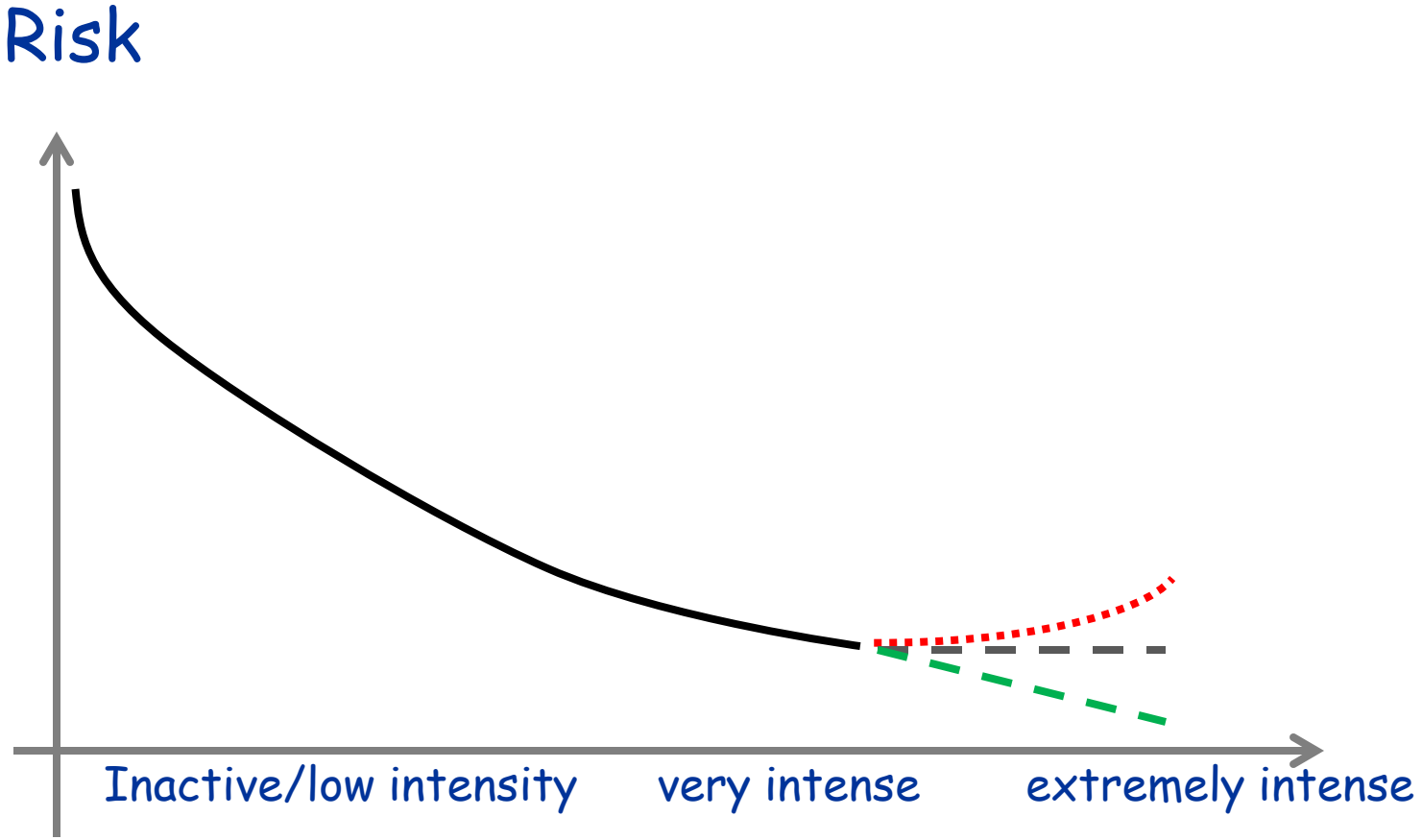
João P. Botero[1], Wagner L. Prado[2], Ricardo L. F. Guerra[1], Guilherme F. F. Speretta[3], Richard D. Leite[3], Jonato Prestes[4], Adrián V. Sanz[5], Scott Lyons[6], Paulo H. S. M. de Azevedo[1], Vilmar Baldissera[3], Sergio E. A. Perez[3], Ana Dâmaso[1] and Rozinaldo G. da Silva[3]

[1]Department of Human Movement Science, Federal University of São Paulo, Santos, São Paulo, Brazil, [2]Physical Education Post-graduate Program, University of Pernambuco, Pernambuco, Brazil, [3]Federal University of São Carlos, São Paulo, Brazil, [4]Graduation Program on Physical Education, Catholic University of Brasilia, Brasi reation, and Sport, Western Kentuck

Summary

The aim of this study was to compare the effect of a cycling training programme performed at intensity corresponding to the lowest value of the respiratory quotient (RQ) versus at intensity corresponding to the ventilatory threshold (VT), on body composition and health-related parameters in overweight women. Thirty-two sedentary obese women (27–42 years old) were studied in a randomized trial of either RQ (n = 17) or VT (n = 15). RQ and VT training sessions were equalized by time (60 min) and performed in a cycloergometer. Anthropometry, body composition, lipid profile, glucose, basal metabolic rate (BMR) and fitness (maximal oxygen uptake) were evaluated before and after 12 weeks of intervention. Body weight, body mass index, fatness and fitness were improved in both groups ($P<0.001$). Triglycerides (TG) levels decreased only in response to RQ ($P<0.001$) and fat-free mass (FFM) to VT ($P = 0.002$). No differences were observed between groups. Both exercise intensities seem to be effective for improving health in overweight women. However, low-intensity compared with the high-intensity exercise training appears to have additional benefits on TG levels and to maintenance of FFM.

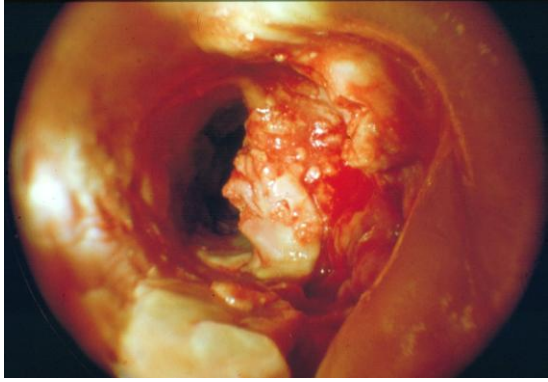
High intensity activity- double egged…?



KAROLINSKA UNIVERSITY HOSPITAL

GIH

Hig intensity and CAD



- SCD increases transiently during vigorous physical activity
- PA causes dilatation in normal coronaries, but may cause vasoconstriction in atherosclerotic segments **(Gordon, J Clin Invest -89)**

- Aggravating factors during exercise

  -catecholamine release

  -platelet adhesion/activation **(Cadroy, J Appl Phys -02)**

  -electrolyte disturbances (i.e. potassium)

  -heat/cold/altitude related complications **(O´Donnell,NEJM -72)**

  -doping/drugs **(Heesch, Heart -00, Kennedy, Med J Aust -93)**

* The level of physical activity? Risk of competition?

KAROLINSKA UNIVERSITY HOSPITAL

GIH

TABLE 3. Physical Stress as a Trigger of Acute Cardiovascular Events During Vigorous Exertion*

Study	Effect Period	End Point	RR (95% CI)
Seattle study[5] (1984)	<1 h	Primary cardiac arrest	56 (23–131)†
Onset study[32] (1993)	1 h	Nonfatal MI	5.9 (4.6–7.7)
TRIMM study[31] (1993)	1 h	Nonfatal MI	2.1 (1.1–3.6)
Hartford Hospital AMI study[6] (1999)	1 h	Nonfatal MI	10.1 (1.6–55.6)
SHEEP study[40] (2000)	<15 min	Nonfatal MI	6.1 (4.2–9.0)
Physician's Health Study[7] (2000)	30 min	SCD	16.9 (10.5–27)

RR indicates relative risk and compares the risk of the cardiac event during exertion with that during sedentary activities; TRIMM, Triggers and Mechanisms of Myocardial Infarction Study; and SHEEP, Stockholm Heart Epidemiology Programme.

*Vigorous exertion is exercise intensity ≥6 METs (1 MET=3.5 mL · kg^{-1} · min^{-1}).

†This RR (56) is the exertion RR for habitually sedentary men. The RR (vs no prior vigorous exercise) for the most active men (≥140 min/wk vigorous exertion) was 5 (95% CI, 2 to 14).

Adapted from Mittleman,[41] with permission from Blackwell Publishing.

. (*Circulation.* 2007;115:2358-2368.)

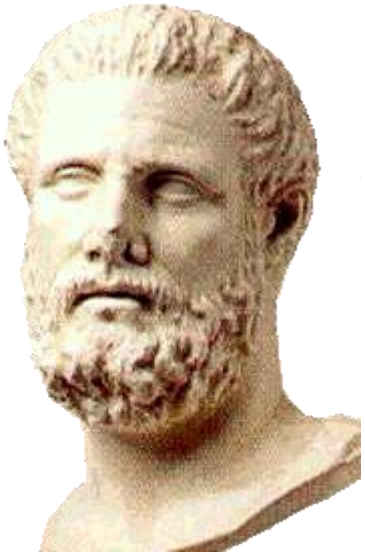
Thompson et al

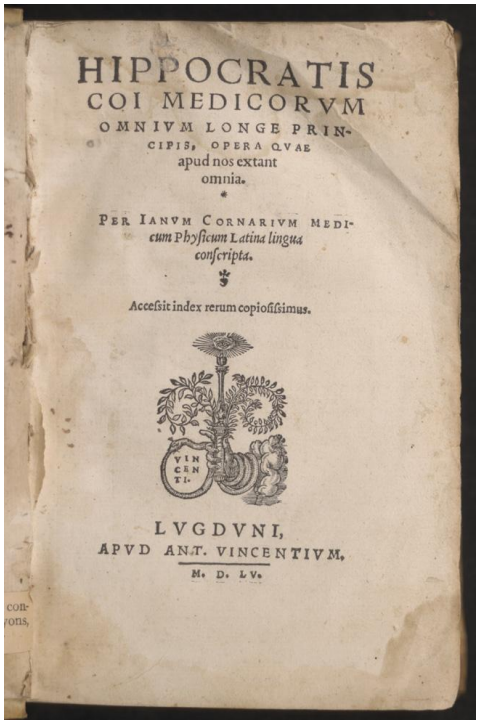
High intensity training

Possibly a higher yield,
But
definitely a need to be personalized,
to achieve the
added benefits at the lowest risk

”If we could give every individual the right amount of nourishment and exercise, not too little and not too much, we would have found the safest way to health”

(Hippocrates 400 BC)





KAROLINSKA UNIVERSITY HOSPITAL

GIH

The key: relative intensity!

Clinical Investigation and Reports

Relative Intensity of Physical Activity and Risk of Coronary Heart Disease

I-Min Lee, MBBS, ScD; Howard D. Sesso, ScD; Yuko Oguma, MD;
Ralph S. Paffenbarger, Jr, MD, DrPH

Background—Current recommendations prescribe at least moderate-intensity physical activity, requiring ≥3 METs (metabolic equivalents) for ≥30 minutes almost daily, generating ≈1000 kcal/wk. Defining intensity using an absolute scale in METs may be limited because it neglects variations in physical fitness: an activity requiring a particular MET value commands greater physical effort among less fit than more fit persons. It is unknown whether moderate-intensity exercise, relative to an individual's capacity, is associated with reduced coronary heart disease (CHD) rates.

Methods and Results—We followed 7337 men (mean age, 66 years) from 1988 to 1995. At baseline, men reported their actual activities and, using the Borg Scale, the perceived level of exertion when exercising (relative intensity). During follow-up, 551 men developed CHD. After multivariate adjustment, the relative risks of CHD among men who perceived their exercise exertion as "moderate," "somewhat strong," and "strong" or more intense were 0.86 (95% confidence interval, 0.66 to 1.13), 0.69 (0.51 to 0.94), and 0.72 (0.52 to 1.00), respectively (P_{trend}=0.02), compared with "weak" or less intense. This inverse association extended to men not fulfilling current recommendations, ie, expending <1000 kcal/wk in physical activity or not engaging in activities of ≥3 METs (P_{trend}=0.03 and 0.007, respectively).

Conclusions—There is an inverse association between relative intensity of physical activity (an individual's perceived level of exertion) and risk of CHD, even among men not satisfying current activity recommendations. Recommendations for "moderate"-intensity physical activity may need to consider individual fitness levels instead of globally prescribing activities of ≥3 METs. (*Circulation*. **2003;107:1110-1116.**)

KAROLINSKA UNIVERSITY HOSPITAL

GIH

The girl with or without tattoos who lived happily ever after because of 'physical activity on prescription': the fourth in the Stieg Larsson Trilogy

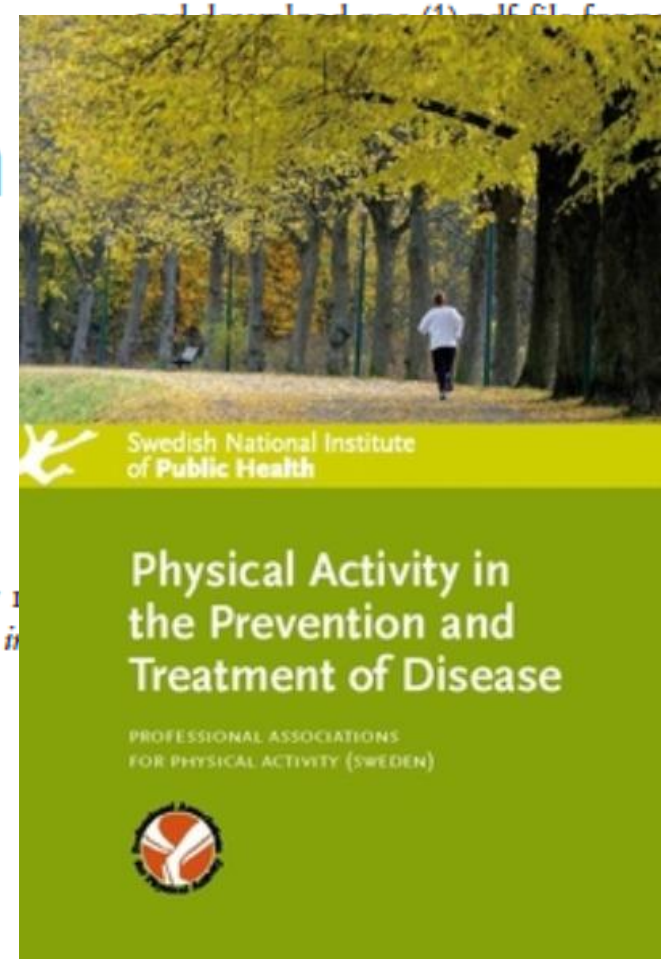
Karim M Khan

(*see page 158*) and see the website fyss.se where you can beat the

Which books changed your life? If it was *Catcher in the Rye*, *East of Eden* or Jack

authorship rights for his ultimately

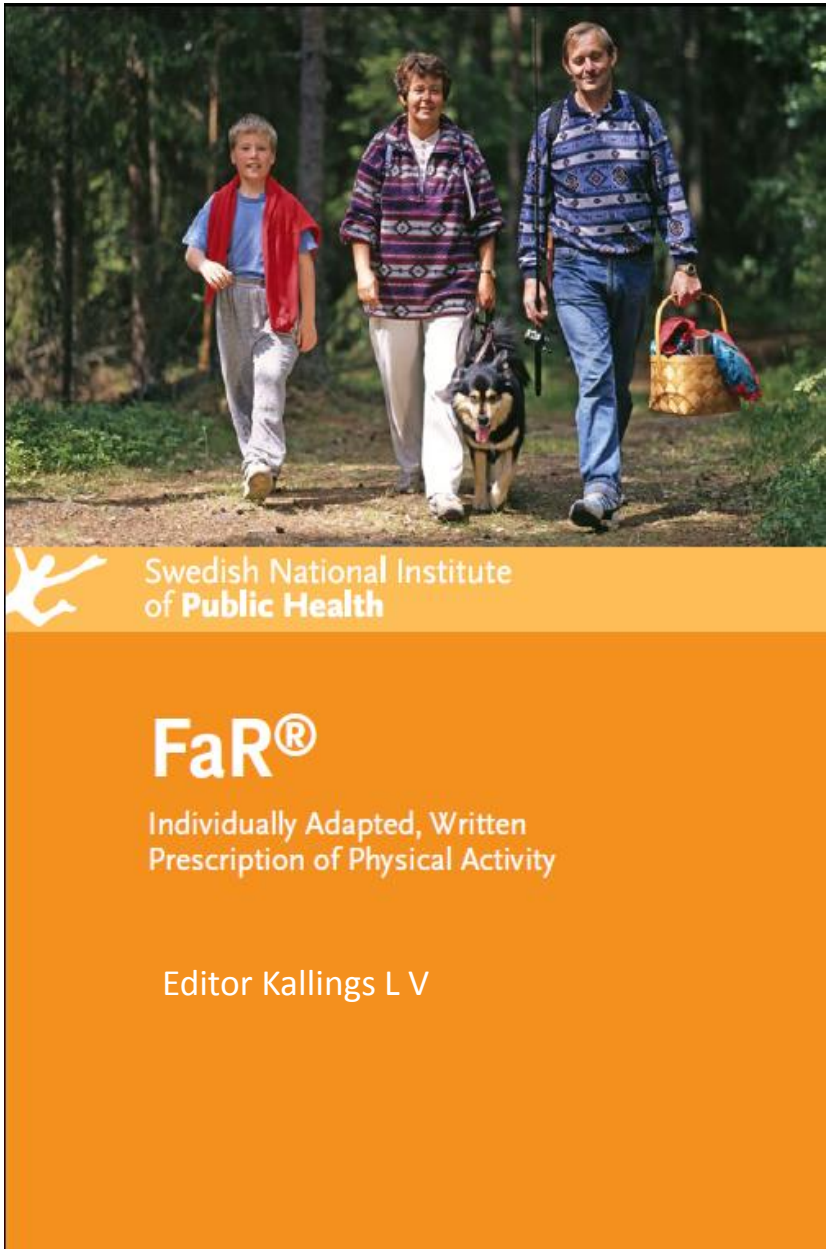
influential book – *Physical Activity*



Translated to Vietnamese 2012, Arabic ?, Portuguese?
Offical reference book of EFSMA "Exercise prescription" Initiative

KAROLINSKA UNIVERSITY HOSPITAL

GIH



How to?

In Swedish with an English summary

R 2011:13

349 pages

www.fhi.se/en/News/News/Textbook-about-physical-activity-on-prescription1/

KAROLINSKA UNIVERSITY HOSPITAL

GIH

The barriers to increased PA

- Individual barriers

  -low motivation to lifestyle change

  -lack of knowledge

- Barriers of the health care system

  -lack of structural support

  time, imbursement, support of organization

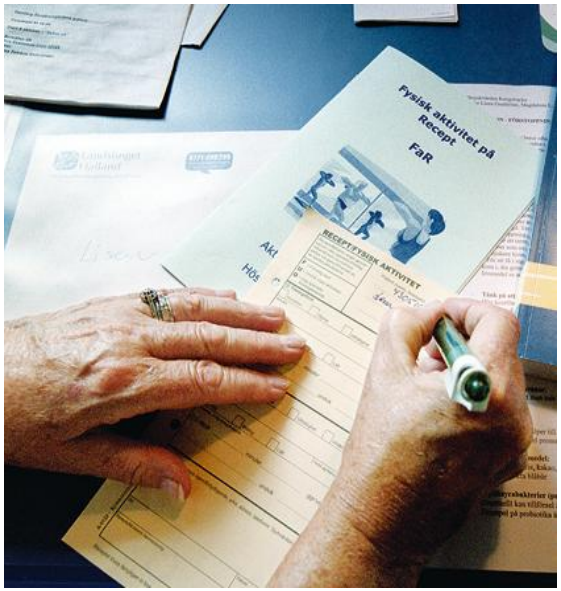
  -lack of education (importance of PA, practical prescr)

  medical school (Frank 2008), health care system

  -the physical activity level of the health care professional (Lobelo, review 2009)

National guidelines for methods of disease prevention, 2011

35 000 papers on smoking, diet,
physical activity and alcohol were evaluated
for effect on life style behaviour



KAROLINSKA UNIVERSITY HOSPITAL

GIH

National guidelines on physical activity

The health care system SHOULD (=MUST):

- Offer advice with added written prescription or pedometer and individual follow-up, to persons being insufficiently physically active (prio 3/10)

The health care system MAY:

*Offer simple advice to a persons, being insufficiently physically active (prio 4)

*Offer qualified advice to prsons, being insufficiently physically active (prio 8)

KAROLINSKA UNIVERSITY HOSPITAL

GIH

Initiative: ”Doctors´ communication of life style behaviours”

LÄKARES Samtal om LEVNADSVANOR

Every section of the Swedish Medical Society gets funding for supporting this project
Ex. Cardiology
Sports and Exercise Medicine
Orthopedics

Svenska Läkaresällskapet

KAROLINSKA UNIVERSITY HOSPITAL

GIH

Key to success in the hospital setting

- Provide an incentive!

  -measure how bad (lifestyle history)-quality registries

  -integrate PA in patient records

  -studies needed (ex. smoking pre-op)

  -education

  -recommendations and guidelines

  -provide logistical framework

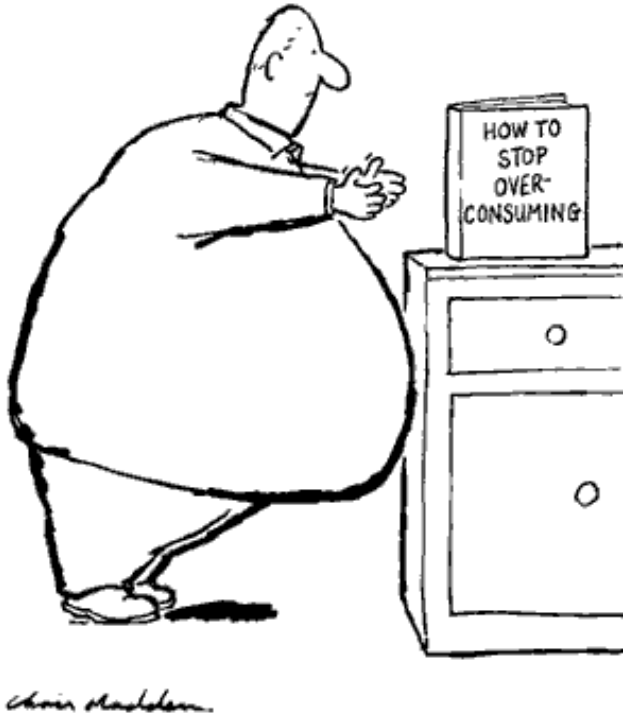
  -money! (from buyers)

KAROLINSKA UNIVERSITY HOSPITAL

GIH

International collaborations needed

- Exercise is medicine- US/Europe)
- ACSM
- EFSMA
- FIMS
- Health promoting hospitals (WHO)
- IOC
- HEPA
- ESC
- Others…



Your Prescription for Health
ExeRcise is Medicine™
www.ExerciseIsMedicine.org

A Health Care Call to Action
Join us as we embark on a nationwide campaign to initiate a dialogue between physicians and every American. Our mission is to make sure that exercise is front and center in every discussion on disease prevention, health and wellness.
www.exerciseismedicine.org

KAROLINSKA UNIVERSITY HOSPITAL

GIH