Corso di Laurea Magistrale in
SCIENZE E TECNICHE
DELL'ATTIVITA' MOTORIA
PREVENTIVA E ADATTATA

Prescrizione Esercizio Fisico

1. Valutazione Preliminare (VP)

Indice

- Scopo
- Anamnesi
- Classificazione del rischio cardiovascolare
- Rischi durante esercizio
- Consenso informato

Scopi della VP

- Identificare controindicazioni (assolute/relative)
  - Identificare/escludere soggetti con contraindicazioni all'esercizio
  - Identificare soggetti che necessitino di valutazione medica prima di essere sottoposti a programma di allenamento
- Segni/sintomi di malattia
- Profilo di rischio
- Classificare il rischio
- Adeguare programma di allenamento

PAR-Q

(Physical Activity Readiness - Questionnaire)

- Questionario di 7 domande per valutare se il cliente necessita di valutazione medica.
- Sviluppato in Canada,per valutare l'*idoneità* a svolgere attività fisica da moderata a vigorosa.
- Se viene risposto "SI" ad almeno 1/7 domande, inviare al medico.

PAR-Q

(Physical Activity Readiness - Questionnaire)

1. Ti è mai stato detto di avere problemi cardiaci?
2. Ti succede *spesso* di avere dolori nella regione del cuore?
3. Ti succede *spesso* di avere vertigini/svenimenti?
4. Sei iperteso?
5. Ti sono mai stati riscontrati (da un medico) stati artrosici o altri problemi ossei che possano essere peggiorati dall'esercizio?
6. Sei a conoscenza di qualche altra buona ragione (fisica) per cui non dovresti svolgere attività fisica?
7. Hai più di 65 anni e non sei allenato a sostenere sforzi vigorosi?

- In caso di almeno una risposta “SI”, avvisare il cliente che è indicata una valutazione medica preliminare.

- Se le risposte sono tutte NO si può ragionevolmente iniziare un programma di attività fisica che dovrà comunque essere adeguato al cliente.

Physical Activity Readiness Questionnaire - PAR-Q (revised 1994)

PAR – Q & YOU

(A Questionnaire for People Aged 15 to 69)

Regular physical activity is fun and healthy, and increasingly more people are starting to become more active every day. Being more active is very safe for most people. However, some people should check with their doctor before they start becoming much more physically active.

If you are planning to become much more physically active than you are now, start by answering the seven questions in the box below. If you are between the ages of 15 and 69, the PAR-Q will tell you if you should check with your doctor before you start. If you are over 69 years of age, and you are not used to being very active, check with your doctor.

Common sense is your best guide when you answer these questions. Please read the questions carefully and answer each one honestly: check YES or NO.

YES	NO	
☐	☐	1. Has your doctor ever said that you have a heart condition and that you should only do physical activity recommended by a doctor?
☐	☐	2. Do you feel pain in your chest when you do physical activity?
☐	☐	3. In the past month, have you had chest pain when you were not doing physical activity?
☐	☐	4. Do you lose your balance because of dizziness or do you ever lose consciousness?
☐	☐	5. Do you have a bone or joint problem that could be made worse by a change in your physical activity?
☐	☐	6. Is your doctor currently prescribing drugs (for example, water pills) for your blood pressure or heart condition?
☐	☐	7. Do you know of any other reason why you should not do physical activity?

If you answered

YES to one or more questions

Talk with your doctor by phone or in person BEFORE you start becoming much more physically active or BEFORE you have a fitness appraisal. Tell your doctor about the PAR-Q and which questions you answered YES.

- You may be able to do any activity you want - as long as you start slowly and build up gradually. Or, you may need to restrict your activities to those which are safe for you. Talk with your doctor about the kinds of activities you wish to participate in and follow his/her advice.
- Find out which community programs are safe and helpful for you.

NO to all questions

If you answered NO honestly to all PAR-Q questions, you can be reasonably sure that you can:

- start becoming much more physically active - begin slowly and build up gradually. This is the safest and easiest way to go.
- take part in a fitness appraisal - this is an excellent way to determine your basic fitness so that you can plan the best way for you to live actively.

DELAY BECOMING MUCH MORE ACTIVE:

- If you are not feeling well because of temporary illness such as a cold or a fever – wait until you feel better; or
- If you are or may be pregnant – talk to your doctor before you start becoming more active.

Please note: If your health changes so that you then answer YES to any of the above questions, tell your fitness or health professional. Ask whether you should change your physical activity plan.

Informed Use of the PAR-Q: The Canadian Society for Exercise Physiology, Health Canada, and their agents assume no liability for persons who undertake physical activity, and if in doubt after completing this questionnaire, consult your doctor prior to physical activity.

You are encouraged to copy the PAR-Q but only if you use the entire form

NOTE: If the PAR-Q is being given to a person before he or she participates in a physical activity program or a fitness appraisal, this section may be used for legal or administrative purposes.

I have read, understood and completed this questionnaire. Any questions I had were answered to my full satisfaction.

NAME _____

SIGNATURE _____ DATE _____

SIGNATURE OF PARENT or GUARDIAN (for participants under the age of majority) _____ WITNESS _____

continued on other side...

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...continued from the other side

PAR – Q & YOU

Physical Activity Readiness Questionnaire - PAR-Q (revised 1994)

We know that being physically active provides benefits for all of us. Not being physically active is recognized by the Heart and Stroke Foundation of Canada as one of the four modifiable primary risk factors for coronary heart disease (along with high blood pressure, high blood cholesterol, and smoking). People are physically active for many reasons - play, work, competition, health, creativity, enjoying the outdoors, being with friends. There are also as many ways of being active as there are reasons. What we choose to do depends on our own abilities and desires. No matter what the reason or type of activity, physical activity can improve our well-being and quality of life. Well-being can also be enhanced by integrating physical activity with enjoyable healthy eating and positive self and body image. Together, all three equal VITALITY. So take a fresh approach to living. Check out the VITALITY tips below!

Active Living:

- accumulate 30 minutes or more of moderate physical activity most days of the week
- take the stairs instead of an elevator
- get off the bus early and walk home
- join friends in a sport activity
- take the dog for a walk with the family
- follow a fitness program

Healthy Eating:

- follow Canada's Food Guide to Healthy Eating
- enjoy a variety of foods
- emphasize cereals, breads, other grain products, vegetables and fruit
- choose lower-fat dairy products, leaner meats and foods prepared with little or no fat
- achieve and maintain a healthy body weight by enjoying regular physical activity and healthy eating
- limit salt, alcohol and caffeine
- don't give up foods you enjoy - aim for moderation and variety

Positive Self and Body Image:

- accept who you are and how you look
- remember, a healthy weight range is one that is realistic for your own body make-up (body fat levels should neither be too high nor too low)
- try a new challenge
- compliment yourself
- reflect positively on your abilities
- laugh a lot

Enjoy eating well, being active and feeling good about yourself. That's VITALITY

FITNESS AND HEALTH PROFESSIONALS MAY BE INTERESTED IN THE INFORMATION BELOW.

The following companion forms are available for doctors' use by contacting the Canadian Society for Exercise Physiology (address below):

The **Physical Activity Readiness Medical Examination (PARmed-X)** - to be used by doctors with people who answer YES to one or more questions on the PAR-Q.

The **Physical Activity Readiness Medical Examination for Pregnancy (PARmed-X for PREGNANCY)** - to be used by doctors with pregnant patients who wish to become more active.

References:

Arraix, G.A., Wigle, D.T., Mao, Y. (1992). Risk Assessment of Physical Activity and Physical Fitness in the Canada Health Survey Follow-Up Study. **J. Clin. Epidemiol.** 45:4 419-428.

Mottola, M., Wolfe, L.A. (1994). Active Living and Pregnancy, In: A. Quinney, L. Gauvin, T. Wall (eds.), **Toward Active Living: Proceedings of the International Conference on Physical Activity, Fitness and Health**. Champaign, IL: Human Kinetics.

PAR-Q Validation Report, British Columbia Ministry of Health, 1978.

Thomas, S., Reading, J., Shephard, R.J. (1992). Revision of the Physical Activity Readiness Questionnaire (PAR-Q). **Can. J. Spt. Sci.** 17:4 338-345.

***To order multiple printed copies of the PAR-Q**, please contact the*

Canadian Society for Exercise Physiology
1600 James Naismith Dr., Suite 311
Gloucester, Ontario CANADA K1B 5N4
Tel. (613) 748-5768 FAX: (613) 748-5763

The original PAR-Q was developed by the British Columbia Ministry of Health. It has been revised by an Expert Advisory Committee assembled by the Canadian Society for Exercise Physiology and Fitness Canada (1994).

Disponible en français sous le titre «Questionnaire sur l'aptitude à l'activité physique - Q-AAP (revisé 1994)».

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Société canadienne de physiologie de l'exercice

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PAR-Q rivisto (rPAR-Q)

1. Un medico ha mai rilevato la presenza di una condizione cardiaca sospetta e raccomandato la prescrizione di attività fisica solo sotto controllo ?
2. Hai mai avuto dolore toracico durante l'attività fisica ?
3. Hai mai avvertito dolore toracico nei mesi passati ?
4. Tendi a perdere conoscenza o a cadere per le vertigini o con una sensazione di mancamento ?
5. Sei a conoscenza di patologie ossee e/o articolari che possano essere aggravati dall'attività fisica ?
6. Ti è mai stato prescritto l'utilizzo di farmaci per la pressione del sangue o per il cuore ?
7. Sei a conoscenza, grazie alla tua esperienza o su suggerimento del medico, di un qualsiasi altro motivo che possa controindicare l'attività fisica senza la supervisione medica ?

rPAR-Q

SE HAI RISPOSTO SI AD UNA O PIU' DI QUESTE DOMANDE:

Se non l'hai fatto recentemente, consulta il tuo medico di fiducia PRIMA di aumentare la tua attività fisica e/o sottoponiti a un test per valutare il tuo stato di forma. Mostra al tuo medico il risultato di questo test, e segui i consigli che ti verranno dati:

1. Attività fisica non limitata, aumentandola con gradualità
2. Attività fisica ridotta o sotto controllo, adeguata alle tue esigenze, almeno nella fase iniziale.

NOTE: non intraprendere l'attività fisica e non sottoporti a test di valutazione del tuo stato di forma se non sei in buone condizioni fisiche o se soffri di una qualsiasi patologia, anche comune, come l'influenza.

Da: Shepard R.J. et al."The Canadian Home Fitness Test. Update". Sports Medicine, 1:359, 1991

WISCONSIN AFFILIATE (AHA)

TABLE 2. AHA/ACSM Health/Fitness Facility Preparticipation Screening Questionnaire

Assess your health needs by marking all *true* statements.

History

You have had:

_____ a heart attack
_____ heart surgery
_____ cardiac catheterization
_____ coronary angioplasty (PTCA)
_____ pacemaker/implantable cardiac defibrillator/rhythm disturbance
_____ heart valve disease
_____ heart failure
_____ heart transplantation
_____ congenital heart disease

If you marked any of the statements in this section, consult your healthcare provider before engaging in exercise. You may need to use a facility with a medically qualified staff.

Symptoms

_____ You experience chest discomfort with exertion.
_____ You experience unreasonable breathlessness.
_____ You experience dizziness, fainting, blackouts.
_____ You take heart medications.

Other health issues:

_____ You have musculoskeletal problems.
_____ You have concerns about the safety of exercise.
_____ You take prescription medication(s).
_____ You are pregnant.

Cardiovascular risk factors

_____ You are a man older than 45 years.
_____ You are a woman older than 55 years or you have had a hysterectomy or you are postmenopausal.
_____ You smoke.
_____ Your blood pressure is >140/90.
_____ You don't know your blood pressure.
_____ You take blood pressure medication.
_____ Your blood cholesterol level is >240 mg/dL.
_____ You don't know your cholesterol level.
_____ You have a close blood relative who had a heart attack before age 55 (father or brother) or age 65 (mother or sister).
_____ You are diabetic or take medicine to control your blood sugar.
_____ You are physically inactive (ie, you get <30 minutes of physical activity on at least 3 days per week).
_____ You are >20 pounds overweight.

If you marked 2 or more of the statements in this section, consult your healthcare provider before engaging in exercise. You might benefit by using a facility with a professionally qualified exercise staff to guide your exercise program.

_____ None of the above is true.

You should be able to exercise safely without consulting your healthcare provider in almost any facility that meets your exercise program needs.

AHA/ACSM indicates American Heart Association/American College of Sports Medicine.

TABLE 3A. Sample Physician Referral Form*

Dear Dr. _____:

Your patient (name of patient) would like to begin a program of exercise and/or sports activity at (name of health/fitness facility). After reviewing his/her responses to our cardiovascular screening questionnaire, we would appreciate your medical opinion and recommendations concerning his/her participation in exercise/sports activity. Please provide the following information and return this form to (name, address, telephone, fax of health/fitness facility contact):

1. Are there specific concerns or conditions our staff should be aware of before this individual engages in exercise/sports activity at our facility? Yes/No
   If yes, please specify: _____
   _____
   _____

2. If this individual has completed an exercise test, please provide the following:
   a. Date of test _____
   b. A copy of the final exercise test report and interpretation
   c. Your specific recommendations for exercise training, including heart rate limits during exercise: _____
   _____

3. Please provide the following information so that we may contact you if we have any further questions:
   _____ I AGREE to the participation of this individual in exercise/sports activity at your health/fitness facility.
   _____ I DO NOT AGREE that this individual is a candidate to exercise at your health/fitness facility because _____

Physician's signature _____

Physician's name _____

Address _____

_____

Telephone _____ Fax _____

Thank you for your help.

*Must be accompanied by a medical release form.

Valutazione del rischio cardiovascolare (ACSM*)

- <u>Anamnesi Famigliare</u>
  - storia di IMA, PTCA, BAC o morte improvvisa in parenti maschi < 55 anni o femmine < 65 anni?

* American College of Sports Medicine

- Fumo
  - Attuale
  - Ex-da < 6 mesi

- Ipertensione arteriosa
  - ≥ 140/90 mmHg
  - Normoteso in terapia

Classification of Blood Pressure

Systolic BP (mmHg)	Category	Diastolic BP (mmHg)
<130	Normal	<85
130-139	High normal	85-89
140-159	Mild hypertension	90-99
160-179	Mod. hypertension	100-109
180-209	Severe hypertension	110-119
> 209	Very Severe	>119

Table 2.3 Heyward

- Ipercolesterolemia
  - Colesterolo Totale > 200 mg/dl
  - LDL > 130 mg/dl
  - HDL < 35 mg/dl
  - Profilo lipidico normale “in terapia”

Cholesterol

< 200 mg/dL Total Cholesterol	Desirable
> 240 mg/dL Total Cholesterol	High
< 130 mg/dL LDL	Desirable
> 160 mg/dL LDL	High
<200 mg/dl Trig.	Desirable
400-1000 mg/dl Trig	High
> 45 mg/dL HDL	Desirable
< 35 mg/dL HDL	Low

Table 2.3

- Iperglicemia/Diabete
  - ≥ 110 mg/dl in almeno 2 occasioni.

Sovrappeso/Obesità

- BMI $\geq$ 30 Kg/m^2
- circonferenza addominale > 100 cm.

- Inattività fisica
  - Assoluta
  - Insufficiente
    - Soggetti che non svolgano sistematicamente almeno 30 min, almeno 5 volte a settimana, ad intensità almeno moderata

Inoltre…

segni/sintomi indicativi di sospetto di malattia cardiorespiratoria

- Senso di dolore/compressione toracica riposo/emozioni/sforzo/freddo
- Dispnea/fatica inusuale (a riposo o per sforzi lievi)
- Sindrome vertiginosa/sincope
- Cardiopalmo/Palpitazioni/Tachicardia
- *Claudicatio Intermittens*

ACSM Risk Stratification

- Low Risk –
  - Maschi < 45 anni
  - Femmine < 55 yrs.
    - Asintomatici con ≤ 1 fattore di rischio maggiore (Ipertensione, Sovrappeso/Obesità, Diabete, Dislipidemia, Famigliarità positiva)

ACSM Risk Stratification

- Moderate Risk –
  - Maschi ≥ 45 anni
  - Femmine ≥ 55 anni
  - Con ≥ 2 fattori di rischio maggiori.

ACSM Risk Stratification

- High Risk –
  - Soggetti con ≥ 1 segno/sintomo di malattia cardiopolmonare (precordialgie, dispnea, fatica inusuale etc)
  - Soggetti con malattia nota

- Altre decisioni comunque vi attendono…

Medico presente?

	Low Risk	Mod. Risk	High Risk
Moderate	Not Necessary	Not Necessary	Recomm.
Vigorous	Not Necessary	Recomm.	Recomm.
Submax. Test	Not Necessary	Not Necessary	Recomm.
Maximal Test	Not Necessary	Recomm.	Recomm.

	Classe A	Classe B	Classe C	Classe D
Diagnosi	Apparentemente sani, asintomatici	IMA, PTCA, BAC, Angina; Valvulopatie acquisite Cardiopatie congenite (*) Cardiomiopatie	IMA, PTCA, BAC, Angina; Valvulopatie acquisite Cardiopatie congenite (*) Cardiomiopatie	Ischemia instabile, scompenso cardiaco, aritmie incontrollate, stenosi e insufficienze valvolari severe.
Caratteristiche cliniche	**A1.** < 45a. (M), < 55a. (F), no fattori di rischio; **A2.** > 45a. (M), > 55a. (F), ? 2 fattori di rischio; **A3.** > 45a. (M), > 55a. (F), > 2 fattori di rischio.	Classe NYHA 1-2 $VO_2max \leq 6$ MET No ischemia/angina a riposo e da sforzo ≤ 6 MET normale PA da sforzo No tachicardia ventricolare.	Classe NYHA 3-4 $VO_2max < 6$ MET Ischemia/angina da sforzo ≤ 6 MET ↓ PA da sforzo TV da sforzo Anamnesi positiva per arresto cardiaco	Instabilità clinica
Attività fisica	Libera	Individualizzata	Individualizzata	Non raccomandata
Controllo ECG, PA	Non richiesto	nelle prime 6-12 sessioni di training	fino alla stabilizzazione.	-
Supervisione	Non richiesta	finchè capaci di automonitorarsi.	fino alla stabilizzazione.	-

CLASSE A

- A1
- A2
- A3

- Apparentemente sani, giovani
- apparentemente sani, adulti
- ≥ 2 fattori di rischio, prova da sforzo massimale negativa

Nessuna limitazione per l'allenamento, né supervisione richiesta.

CLASSE B

- presenza di patologia cardiovascolare nota, ma stabile
  1. No aritmie significative da sforzo;
  2. No ridotta riserva coronarica;
  3. Frazione di eiezione (FE)>40%.
- basso rischio per af vigorosa, ma superiore a quello di soggetti apparentemente sani.

CLASSE B

Comprende:
IMA, BAC, PTCA, Angina, valvulopatie, cardiopatie congenite, scompenso cardiaco stabile (NYHA I-II)

Clinicamente si caratterizzano per:
capacità di esercizio $\geq$ 6 MET
non ischemia nè angina a riposo o da sforzo $\geq$ 6 MET
normale aumento di PA sistolica da sforzo
assenza di tachicardia ventricolare

sono soggetti in grado di automonitorarsi

CLASSE B

In questi soggetti af deve essere individualizzata e prescritta da personale qualificato (medici). E' raccomandata la supervisione medica durante le prime sessioni o comunque quando si comincia il lavoro, nonché la supervisione da parte di personale qualificato (fase guidata) finchè i soggetti diventeranno capaci di "far da soli".

CLASSE C

Soggetti a rischio da moderato a severo per complicazioni cardiache da sforzo, e/o incapaci di autoregolarsi o di comprendere le raccomandazioni.

CLASSE C

Comprende:
precedente episodio di FV o arresto senza IMA,
aritmia ventricolare complessa per intensità da lieve a moderata in terapia,
mal tronco comune,
FE<30%;
1 o più di:

- ≥ 2 IMA pregressi
- ≥ classe NYHA III-IV
- ≥ ex cap < 6 MET
- ≥ ↓ ST ≥ 1mm o angina a < 6 MET
- ≥ ↓ di PA da sforzo
- ≥ altri problemi medici minacciosi per la vita.

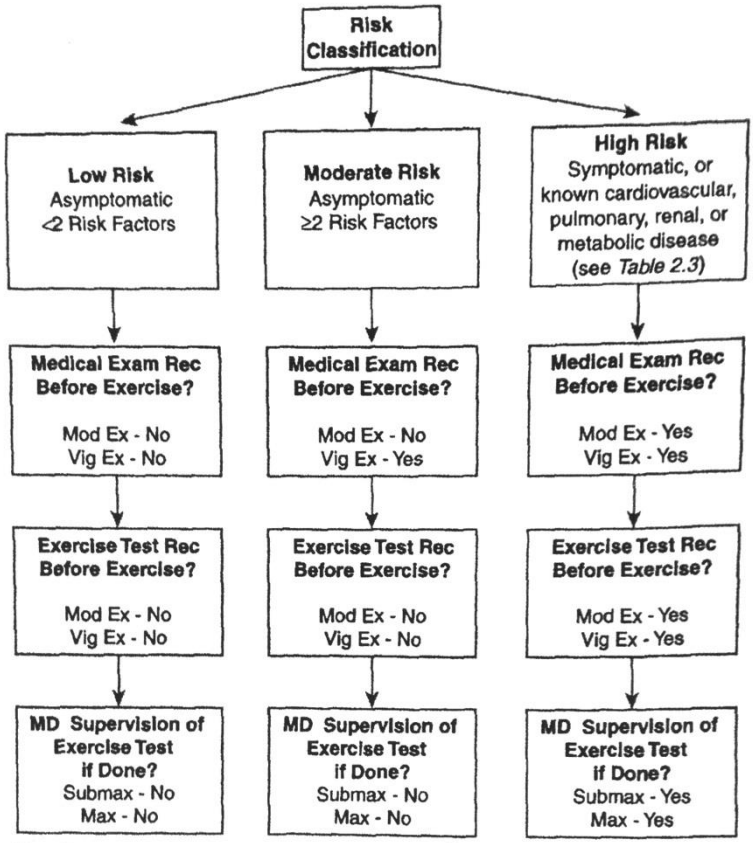
Af individualizzata e prescritta da personale qualificato. Supervisione medica e strumentale fino alla stabilizzazione del quadro clinico. Allenamento supervisionato da personale qualificato.

CLASSE D

condizioni instabili come ischemia, scompenso, aritmie incontrollate, stenosi aortica severa e sintomatica, cardiomiopatia ipertrofica, recente miocardite, ipertensione polmonare severa, PA basale >= 220/110, miocardite o pericardite sospetta, aneurisma aortico dissecante, embolia polmonare recente, tromboflebite in atto, cardiopatie congenite.

Nessuna af raccomandata.

Questa classificazione non considera la presenza di co-morbidità importanti e frequenti come diabete, pneumopatie severe, obesità, patologie dell'apparato muscolo-scheletrico, nervoso, gravidanze complicate etc che di per se impongono limitazione e che necessitano di stretta supervisione.



Mod Ex: Moderate intensity exercise; 40%–<60% $\dot{V}O_2R$; 3–<6 METs
"An intensity that causes noticeable increases in HR and breathing."

Vig Ex: Vigorous intensity exercise; ≥60% $\dot{V}O_2R$; ≥6 METs
"An intensity that causes substantial increases in HR and breathing."

Not Rec: Reflects the notion a medical examination, exercise test, and physician supervision of exercise testing are not recommended in the preparticipation screening; however, they may be considered when there are concerns about risk, more information is needed for the Ex R_x, and/or are requested by the patient or client.

Rec: Reflects the notion a medical examination, exercise test, and physician supervision are recommended in the preparticipation health screening process.

ACSM, GETP9, 2013

Consenso Informato

- Scritto di facile comprensione, essenziale, comprendente:
  - Definizione degli obiettivi (testing & training)
  - Spiegazione delle procedure (cosa intendete fare)
  - Descrizione dei rischi potenziali
  - Descrizione dei benefici attesi
  - Uno spazio in cui il cliente possa manifestare dubbi o rifiutare
  - Dichiarazione di rispetto privacy/trattamento dati personali
  - Firmato da voi, cliente e testimone
  - Legalmente approvato

Informed Consent

In order to assess cardiovascular function, body composition, and other physical fitness components, the undersigned hereby voluntarily consents to engage in one or more of the following tests (check the appropriate boxes):

- ❒ Graded exercise stress test
- ❒ Body composition tests
- ❒ Muscle fitness tests
- ❒ Flexibility tests

Explanation of the tests

The graded exercise test is performed on a bicycle ergometer or motor-driven treadmill. The workload is increased every few minutes until exhaustion or until other symptoms dictate that we terminate the test. You may stop the test at any time because of fatigue or discomfort.

The underwater weighing procedure involves being completely submerged in a tank or tub after fully exhaling the air from your lungs. You will be submerged for 3 to 5 seconds while we measure your underwater weight. This test provides an accurate assessment of your body composition.

For muscle fitness testing, you lift weights for a number of repetitions using barbells or exercise machines. These tests assess the strength and endurance of the major muscle groups in the body.

For evaluation of flexibility, you perform a number of tests. During these tests, we measure the range of motion in your joints.

Risks and discomforts

During the graded exercise test, certain changes may occur. These changes include abnormal blood pressure responses, fainting, irregularities in heartbeat, and heart attack. Every effort is made to minimize these occurrences. Emergency equipment and trained personnel are available to deal with these situations if they occur.

You may experience some discomfort during the underwater weighing, especially after you expire all the air from your lungs. However, this discomfort is momentary, lasting only 3 to 5 seconds. If this test causes you too much discomfort, an alternative procedure (e.g., skinfold or bioelectrical impedance test) can be used to estimate your body composition.

There is a slight possibility of pulling a muscle or spraining a ligament during the muscle fitness and flexibility testing. In addition, you may experience muscle soreness 24 or 48 hours after testing. These risks can be minimized by performing warm-up exercises prior to taking the tests. If muscle soreness occurs, appropriate stretching exercises to relieve this soreness will be demonstrated.

Expected benefits from testing

These tests allow us to assess your physical working capacity and to appraise your physical fitness status. The results are used to prescribe a safe, sound exercise program for you. Records are kept strictly confidential unless you consent to release this information.

Inquiries

Questions about the procedures used in the physical fitness tests are encouraged. If you have any questions or need additional information, please ask us to explain further.

From Vivian H. Heyward, 2002, *Advanced Fitness Assessment and Exercise Prescription,* 4th ed. (Champaign, IL: Human Kinetics).

Freedom of Consent

Your permission to perform these physical fitness tests is strictly voluntary. You are free to stop the tests at any point, if you so desire.

I have read this form carefully and I fully understand the test procedures that I will perform and the risks and discomforts. Knowing these risks and having had the opportunity to ask questions that have been answered to my satisfaction, I consent to participate in these tests.

Date	Signature of patient
Date	Signature of witness
Date	Signature of supervisor

From Vivian H. Heyward, 2002, *Advanced Fitness Assessment and Exercise Prescription,* 4th ed. (Champaign, IL: Human Kinetics).

Rischi maggiori durante esercizio

- Morte Improvvisa, IMA

Eventi come questi sono di grande impatto, e rischiano di minare il consenso rispetto alle modificazioni dello stile di vita in senso fisicamente attivo come strumento terapeutico… specialmente per i soggetti portatori di malattie cardiovascolari…

"…nella foresta fa più rumore un albero che cade di tanti che crescono…"

Nei giovani

La morte improvvisa durante af nei giovani dipende da:

- cardiopatie congenite
- farmaci (stimolanti SNC, doping ?)
- traumi

Negli adulti

- IMA più frequente in soggetti poco allenati.
- Morte improvvisa: 88% su base aterosclerotica.

Questo dice che la morte improvvisa da af può essere prevenuta da screening appropriati.

Come si valuta il Rischio ?

numero di eventi ogni 10.000 partecipanti/ora.

COSA SIGNIFICA
N. EVENTI/10.000 ORE ?

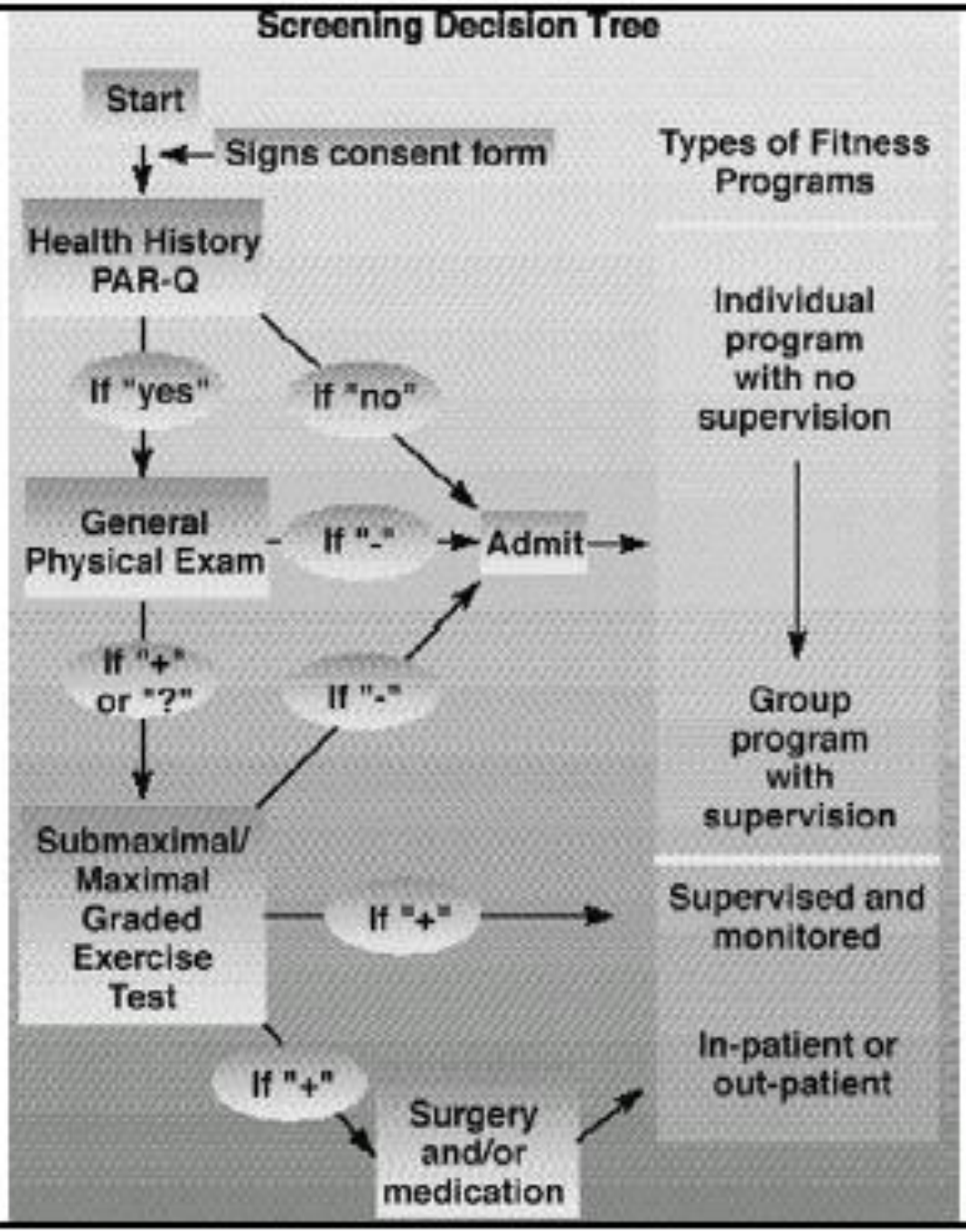
Se una persona si esercita per 30'/giorno/5g./settimana, essa accumula 130 ore/anno di allenamento. Se 1 persona accumula 130 ore/anno, 77 persone che si allenano 130 ore/anno determinano 10.000 persone-ora

E' noto che il rischio di complicazioni (*) è circa 0.10/10.000 persone-ora, ci possiamo dunque aspettare 1 complicazione/770 partecipanti/anno.

Se ogni persona si allena 2.5 volte a settimana invece di 5, che sembra più realistico, ci si attende 1 complicazione/1500 partecipanti/anno.

Se poi consideriamo quale rischio corrono persone sane, ben valutate e seguite durante l'allenamento, possiamo stimare che il rischio sia di 0.03/10.000 persone ora, pari a 1 complicazione/2564 partecipanti/anno.

(*) Sono complicazioni da attività fisica quelle minacciose per la vita: il rischio di complicazioni gravi e di eventi fatali in 2.9 milioni di clienti di centri fitness è di 1136 complicazioni e 71 eventi fatali (Franklin 1998).


Screening Decision Tree
Start
Signs consent form
Health History
PAR-Q
If "yes"
If "no"
General
Physical Exam
If "-"
Admit
If "+"
or "?"
If "-"
Submaximal/
Maximal
Graded
Exercise
Test
If "+"
If "+"
Surgery
and/or
medication
Types of Fitness Programs
Individual program with no supervision
Group program with supervision
Supervised and monitored
In-patient or out-patient

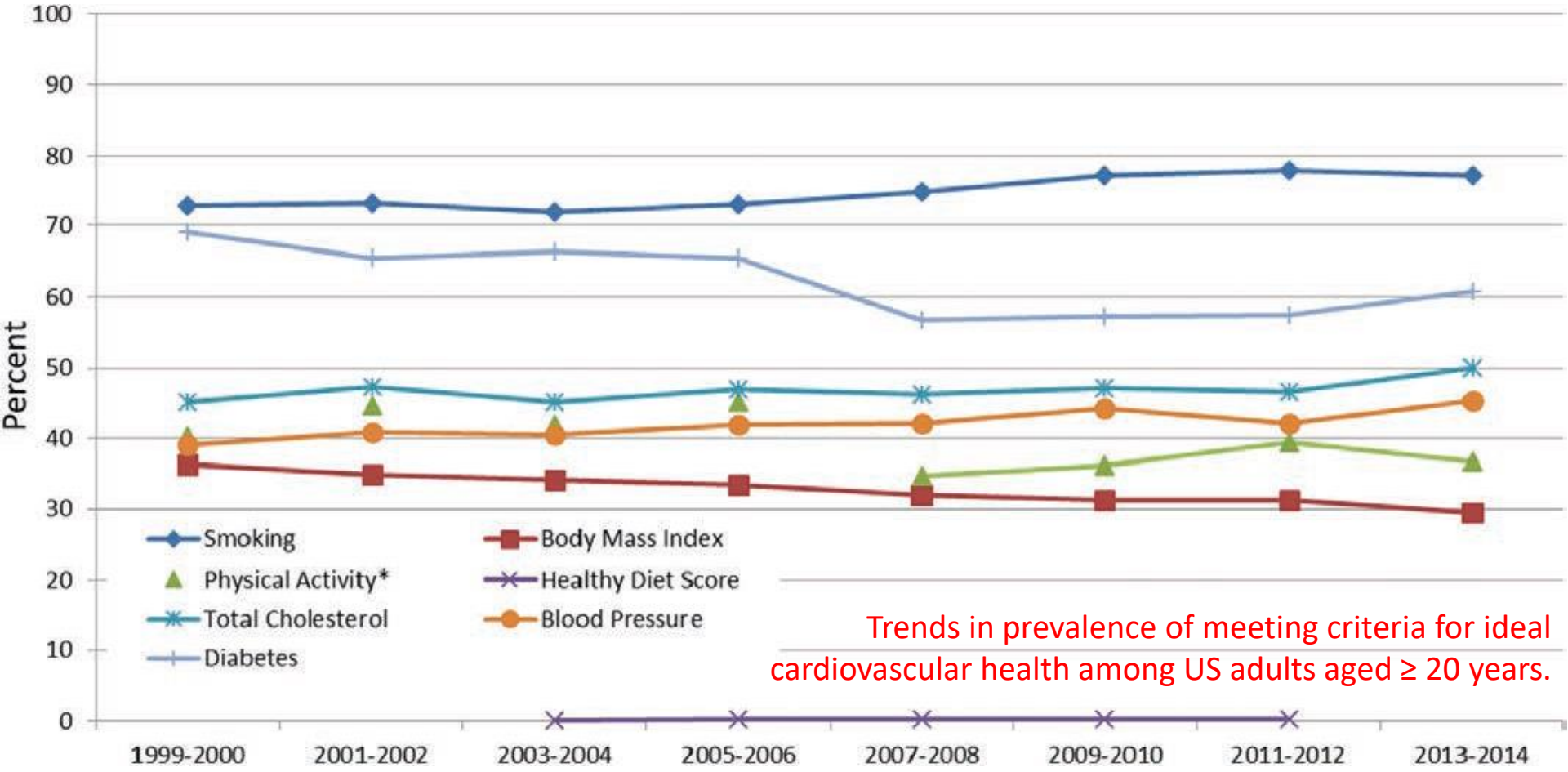
American Heart Association's 2020 Strategic Impact Goals

	Level of Cardiovascular Health		
Metric	Poor	Intermediate	Ideal
Smoking	Current smoker	Quit smoking <12 mo	Never smoker or quit smoking ≥12 mo
Diet*	Diet score=0–1	Diet score=2–3	Diet score=4–5
Physical activity†	No physical activity	1–149 min/wk of moderate intensity, 1–74 min/wk of vigorous intensity, or 1–149 min/wk moderate plus vigorous intensity activity (whereby time in vigorous activity is doubled)	≥150 min/wk of moderate intensity, ≥75 min/wk of vigorous intensity, or ≥150 min/wk of moderate plus vigorous intensity activity (in which time in vigorous activity is doubled)
Body weight	BMI ≥30 kg/m^2	BMI 25–29.9 kg/m^2	BMI <25 kg/m^2
Glucose/diabetes mellitus	FPG ≥126 mg/dL or diagnosed diabetes mellitus with HbA_{1c} ≥7%	FPG 100–125 mg/dL or diagnosed diabetes mellitus with HbA_{1c} <7%	FPG <100 mg/dL
Cholesterol	Total cholesterol ≥240 or treated total cholesterol >200 mg/dL	Total cholesterol 200–239 or treated total cholesterol <200 mg/dL	Total cholesterol <200 mg/dL
BP	Treated BP >140/>90 and SBP ≥140 or DBP ≥90 mm Hg	SBP 120–139 or DBP 80–89 or treated BP <140/<90 mm Hg	BP <120/<80 mm Hg

Huffman MD, et al. *Circulation* 2012

Heart Disease and Stroke Statistics—2017 Update

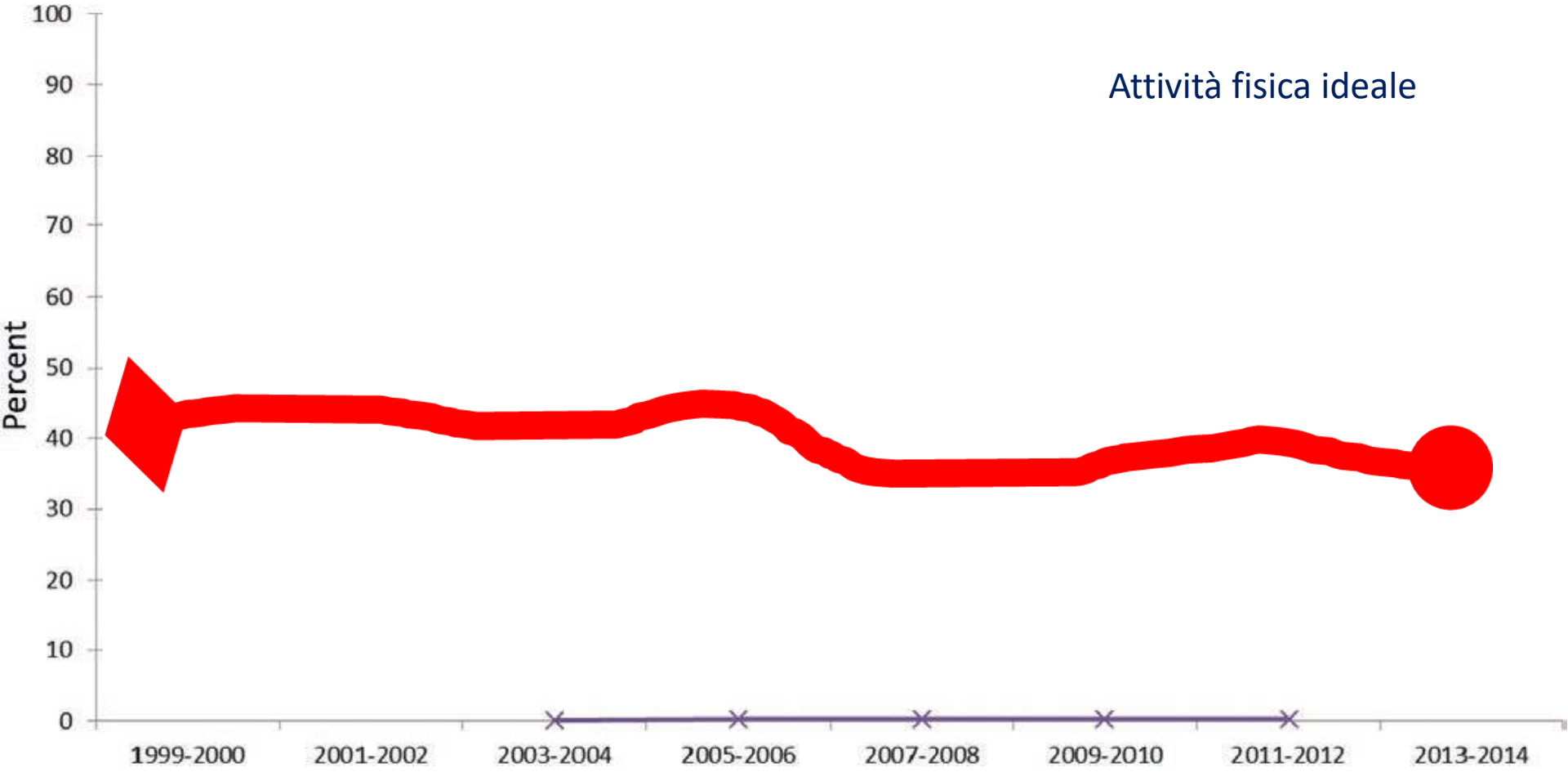
A Report From the American Heart Association

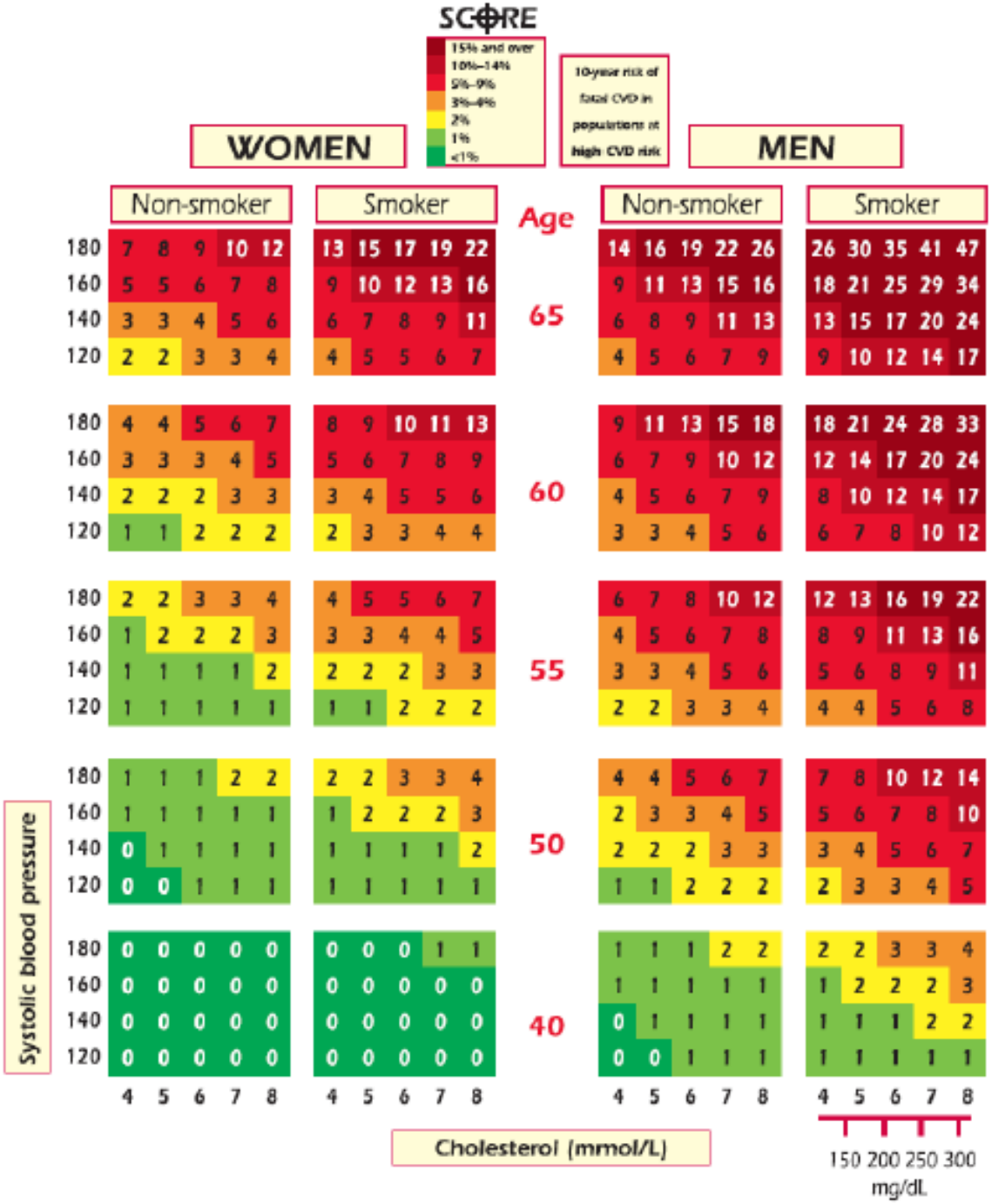


Trends in prevalence of meeting criteria for ideal cardiovascular health among US adults aged ≥ 20 years.

Heart Disease and Stroke Statistics—2017 Update

A Report From the American Heart Association




SCORE
15% and over
10%–14%
5%–9%
3%–4%
2%
1%
<1%
10-year risk of fatal CVD in populations at high CVD risk
WOMEN
MEN
Non-smoker
Smoker
Non-smoker
Smoker
Age
65
60
55
50
40
Systolic blood pressure
180 160 140 120
4 5 6 7 8
Cholesterol (mmol/L)
150 200 250 300
mg/dL

European Heart Journal
doi:10.1093/eurheartj/ehw053

Use of exercise capacity to improve SCORE risk prediction model in asymptomatic adults

Conclusion Both SCORE and exercise capacity are strong independent predictors of all-cause mortality. The addition of exercise capacity to the SCORE risk model can improve the accuracy of the model.

Israel A. et al. *Eur Heart J* 2016

Net Reclassification Improvement

Model	
SCORE	Reference
SCORE + EXERCISE CAPACITY	+56,8%

EXERCISE CAPACITY: maximal exercise testing

Israel A. et al. *Eur Heart J* 2016

Improved Reclassification of Mortality Risk by Assessment of Physical Activity in Patients Referred for Exercise Testing

n = 6962

Età = 58.9 ± 11.3 a.

M/F = 6686 / 276

Follow-up = 9.8 ± 4.4 a.

Myers J. et al. *Am J Med* 2015

Physical Activity Criterion

- *"At least 3 times a week, do you engage in some form of regular activity such as brisk walking, jogging, bicycling, or swimming, long enough to work up a sweat, get your heart thumping, or become short of breath?"*

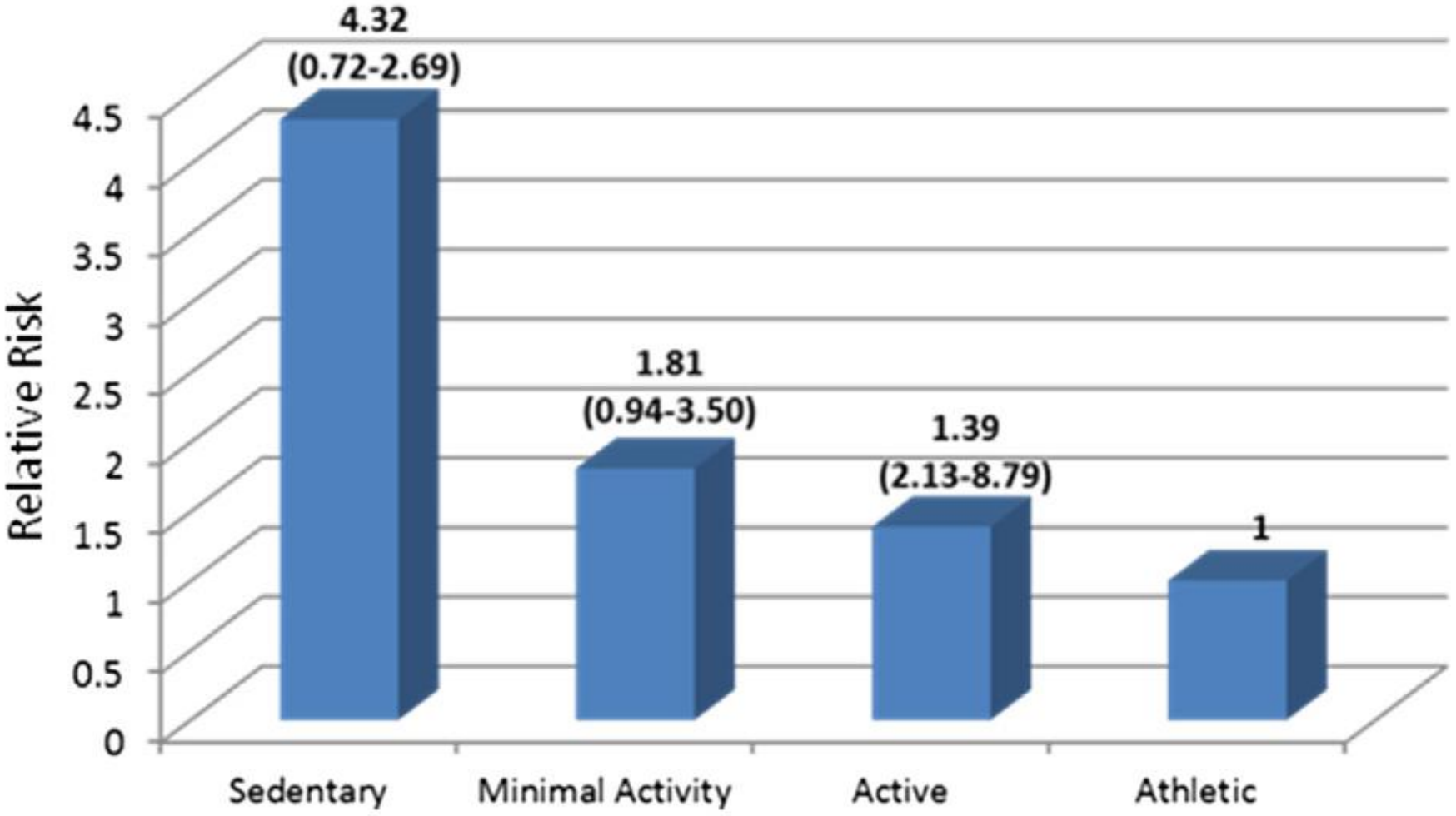
Myers J. et al. *Am J Med* 2015

Category-Free Net Reclassification Improvement

	Overall NRI	
Model	Estimate	*P* Value
BRF	Reference	1.0 (ref)
BRF + activity criterion y/n	22.8%	<.001
BRF + exercise capacity	43.5%	<.001
BRF + exercise capacity + activity criterion y/n	42.8%	<.001

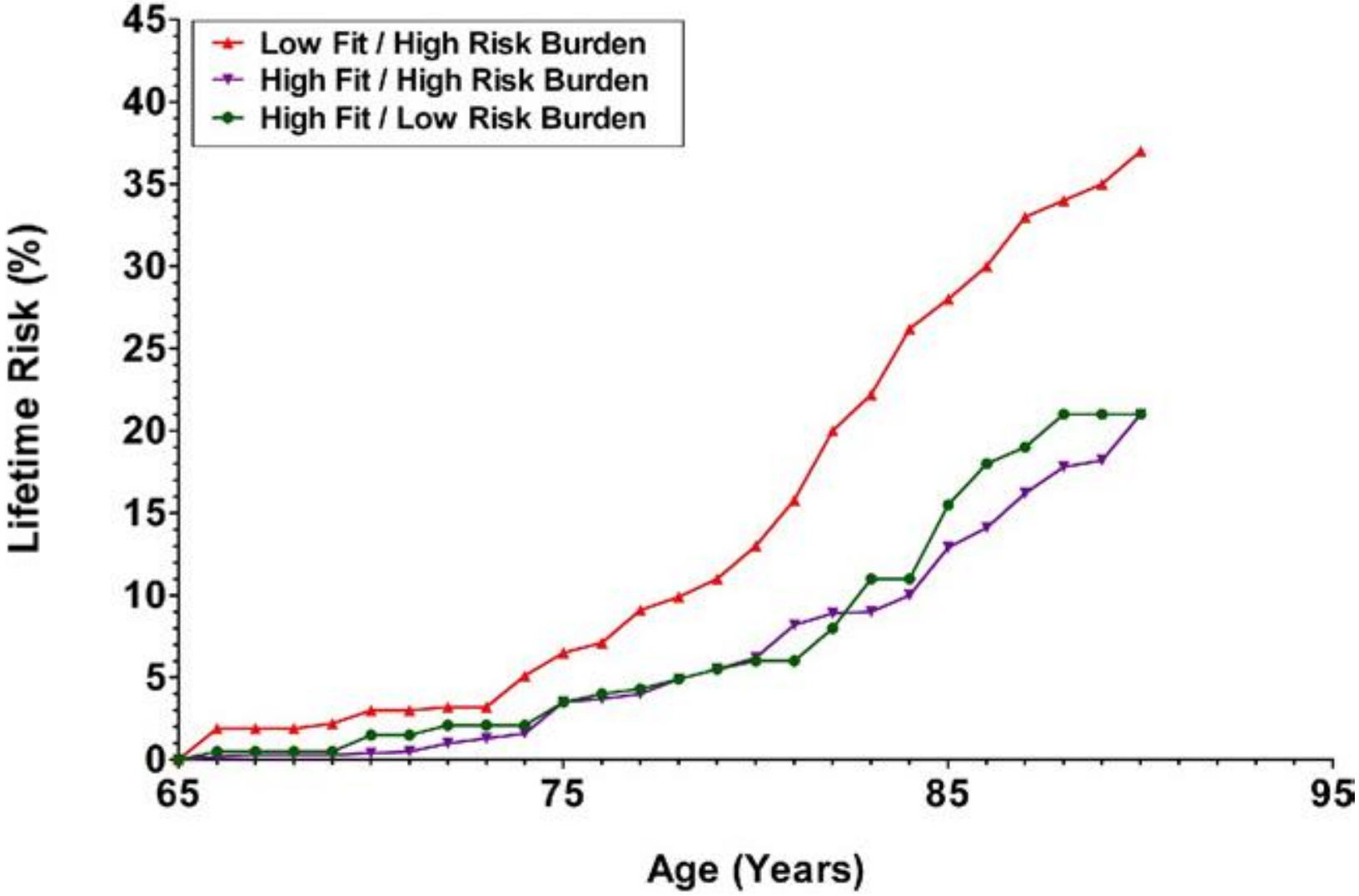
Baseline risk factors are age, body mass index, hypertension, hyperlipidemia, cardiovascular disease, smoking, and diabetes.
BRF = baseline risk factors; NRI = net reclassification improvement.

Myers J. et al. *Am J Med* 2015



Myers J. et al. *Am J Med* 2015

Lifetime Risks for CVD Death by Cardiorespiratory Fitness and Risk Burden



Berry JD et al. *JACC* 2011