

# Arytmi och fysisk aktivitet

När ska man? När ska man inte?

HRG

Fortbildningsdagarna 2024

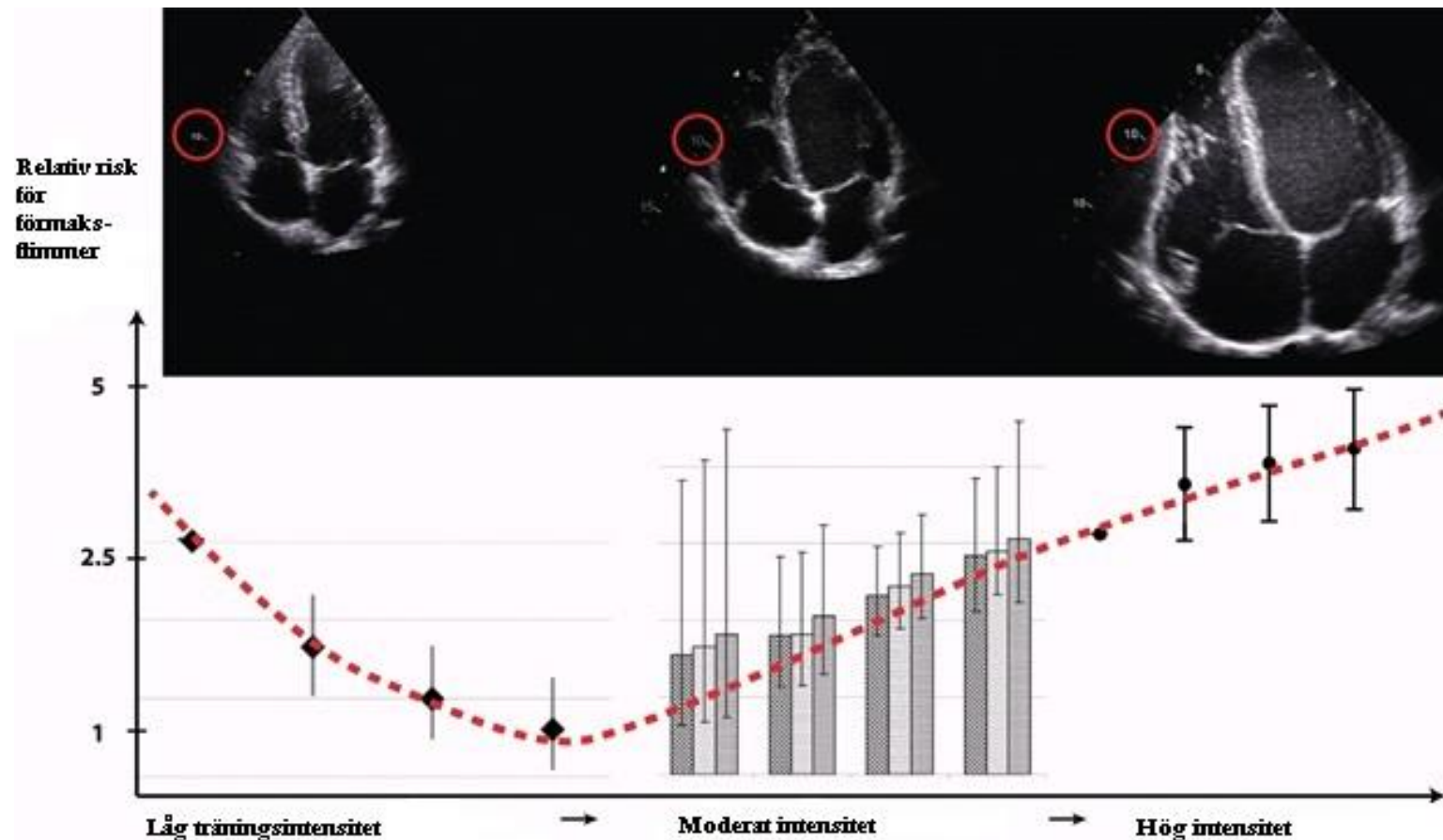
Michael Ringborn och Anneli Svensson

240208



# Träning och förmaksflimmer

- Uthållighetsträning bland män- risk
- Inget tydligt sådant samband hos kvinnor



# Träning vid förmaksflimmerdiagnos?

- I grunden mkt bra med träning vid flimmer!!
- Observans på andra negativa faktorer som har samband med flimmer
  - Hypertyreos
  - Alkoholöverkonsumtion
  - Bakomliggande strukturell hjärtsjd/preexcitation/hypertoni mm
- Bedöm risk för mkt snabb AV-överledning- bra frekvenskontroll
- Anamnes på fladder
  - risk för 1:1 överledning- ev förebyggande CTI ablation



# Träning vid förmaksflimmerdiagnos?

- Rytmkontroll
  - Ej singelbehandling med klass 1C (Flekainid), utan bör kompletteras med ex betablockad
  - Många svårt med antiarytmika pga sinusbradykardi och/eller kronotrop insuff. Nära till hands med flimmerablation
- Efter flimmerablation- ok att träna efter 1 månad om mår bra
- Undvik sporter med hög risk för trauma om står på NOAK



# ESC rekommendationsgrader

|           |  |                                |
|-----------|--|--------------------------------|
| Class I   | Evidence and/or general agreement that a given treatment or procedure is beneficial, useful, effective.                        | Is recommended or is indicated |
| Class II  | Conflicting evidence and/or a divergence of opinion about the usefulness/efficacy of the given treatment or procedure.         |                                |
| Class IIa | Weight of evidence/opinion is in favour of usefulness/efficacy.  | Should be considered           |
| Class IIb | Usefulness/efficacy is less well established by evidence/opinion.  | May be considered              |
| Class III | Evidence or general agreement that the given treatment or procedure is not useful/effective, and in some cases may be harmful. | Is not recommended             |

|                     |  |
|---------------------|--|
| Level of evidence A | Data derived from multiple randomized clinical trials or meta-analyses.                      |
| Level of evidence B | Data derived from a single randomized clinical trial or large non-randomized studies.        |
| Level of evidence C | Consensus of opinion of the experts and/or small studies, retrospective studies, registries. |



| Recommendations  | Class | Level |
|--|-------|-------|
| Regular physical activity is recommended to prevent AF.  | I     | A     |
| Evaluation and management of structural heart disease, thyroid dysfunction, alcohol or drug abuse or other primary causes of AF is recommended before engaging in sports.  | I     | A     |
| Counseling about the effect of long-lasting intense sports participation on (recurrence of) AF is recommended in individuals with AF who exercise vigorously for prolonged periods, especially in middle-aged men. | I     | B     |
| AF ablation is recommended in exercising individuals with recurrent symptomatic AF, and/or in those who do not want drug therapy, given its impact on athletic performance.  | I     | B     |



## Exercise recommendations in individuals with atrial fibrillation (2)



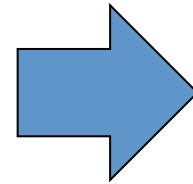
| Recommendations   | Class | Level |
|---|-------|-------|
| The ventricular rate while exercising with AF should be considered in every exercising individual (by symptoms and/or by ECG monitoring), and titrated rate control should be instituted.           | Ila   | C     |
| Participation in sports without antiarrhythmic therapy should be considered in individuals without structural heart disease, and in whom AF is well-tolerated.                                      | Ila   | C     |
| Cavo-tricuspid isthmus ablation should be considered in those with documented flutter who want to engage in intensive exercise, to prevent flutter with 1:1 atrioventricular conduction.            | Ila   | C     |
| Prophylactic cavo-tricuspid isthmus ablation to prevent flutter should be considered in individuals with AF who want to engage in intensive exercise and in whom class I drug therapy is initiated. | Ila   | C     |

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# Effekter av träning

- Förbättrad CRF (cardiorespiratory fitness)
- Kardiella effekter (elektrisk, strukturell, funktionell remodelering)
  - Ökad enddiastolisk volym
  - Kammarmassa
  - Vänsterkammars-”compliance”
  - Ökad parasympatisk tonus
- Ökad cirkulerande blodvolym (20-25%)
- Vaskulära effekter
- Muskulära effekter



Ökad slagvolym



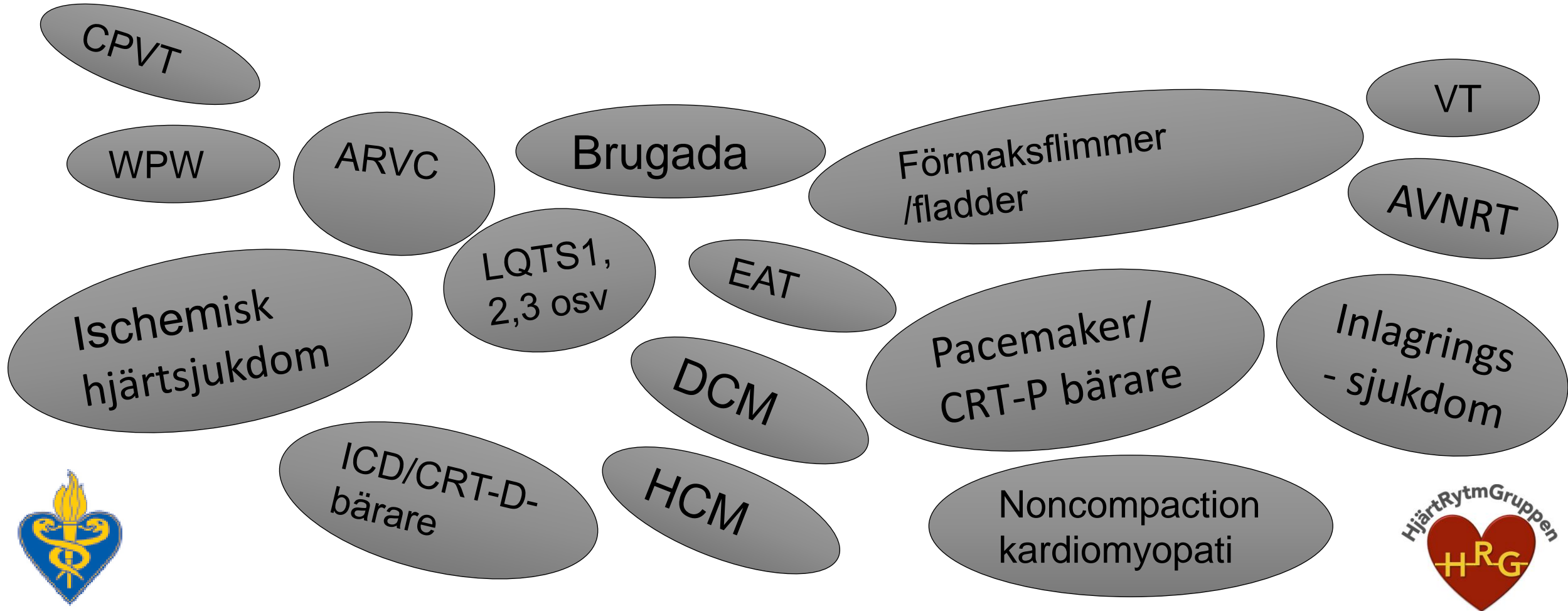


# Effekter av träning

- Förbättrar insulinresistens
- Förebygger/motverkar hypertension
- Förbättrar dyslipidemi
- Minskar övervikt



# Ska/får/bör man träna om man har en (arytmogen) hjärtsjukdom?



# Tidigare ESC guidelines

European Heart Journal  
doi:10.1093/

ESC Report

EUROPEAN SOCIETY OF CARDIOLOGY®

**Recommendations for competitive sports participation in athletes with cardiovascular disease**

A consensus document of the Working Group of Sports Cardiology of the World Heart Federation and the European Association of Cardiovascular Physiotherapy on behalf of the ESC Working Group on Sudden Cardiac Death

**Till varje pris undvika arytm/plötslig hjärtdöd**

**Undvik gärna träning vid kardiell sjukdom som kan vara arytmogen!**

Antonio Pelliccia<sup>1\*</sup>, Robert Fagard<sup>2</sup>, Hans Hahn<sup>3</sup>, Giovanni Di Biase<sup>4</sup>, Paola Arbustini<sup>5</sup>, Deodato Assanelli<sup>6</sup>, Alessandro Biffi<sup>1</sup>, Mats Borjesson<sup>7</sup>, Francesco Corrado<sup>9</sup>, Pietro Delise<sup>10</sup>, Uwe Dorwarth<sup>11</sup>, Asle Hirth<sup>3</sup>, Hein Heidbuchel<sup>12</sup>, Klaus P. Mellwig<sup>13</sup>, Nicole Panhuyzen-Goedkoop<sup>14</sup>, Angela Pisani<sup>5</sup>, Erik E. Sjöstrand<sup>15</sup>, Frank van-Buuren<sup>13</sup>, and Luc Vanhees<sup>2</sup>



## **2020 ESC Guidelines on sports cardiology and exercise in patients with cardiovascular disease**

**The Task Force on sports cardiology and exercise in patients with cardiovascular disease of the European Society of Cardiology (ESC)**

## **2022 ESC Guidelines for the management of patients with ventricular arrhythmias and the prevention of sudden cardiac death**

**Developed by the task force for the management of patients with ventricular arrhythmias and the prevention of sudden cardiac death of the European Society of Cardiology (ESC)**

**Endorsed by the Association for European Paediatric and Congenital Cardiology (AEPC)**

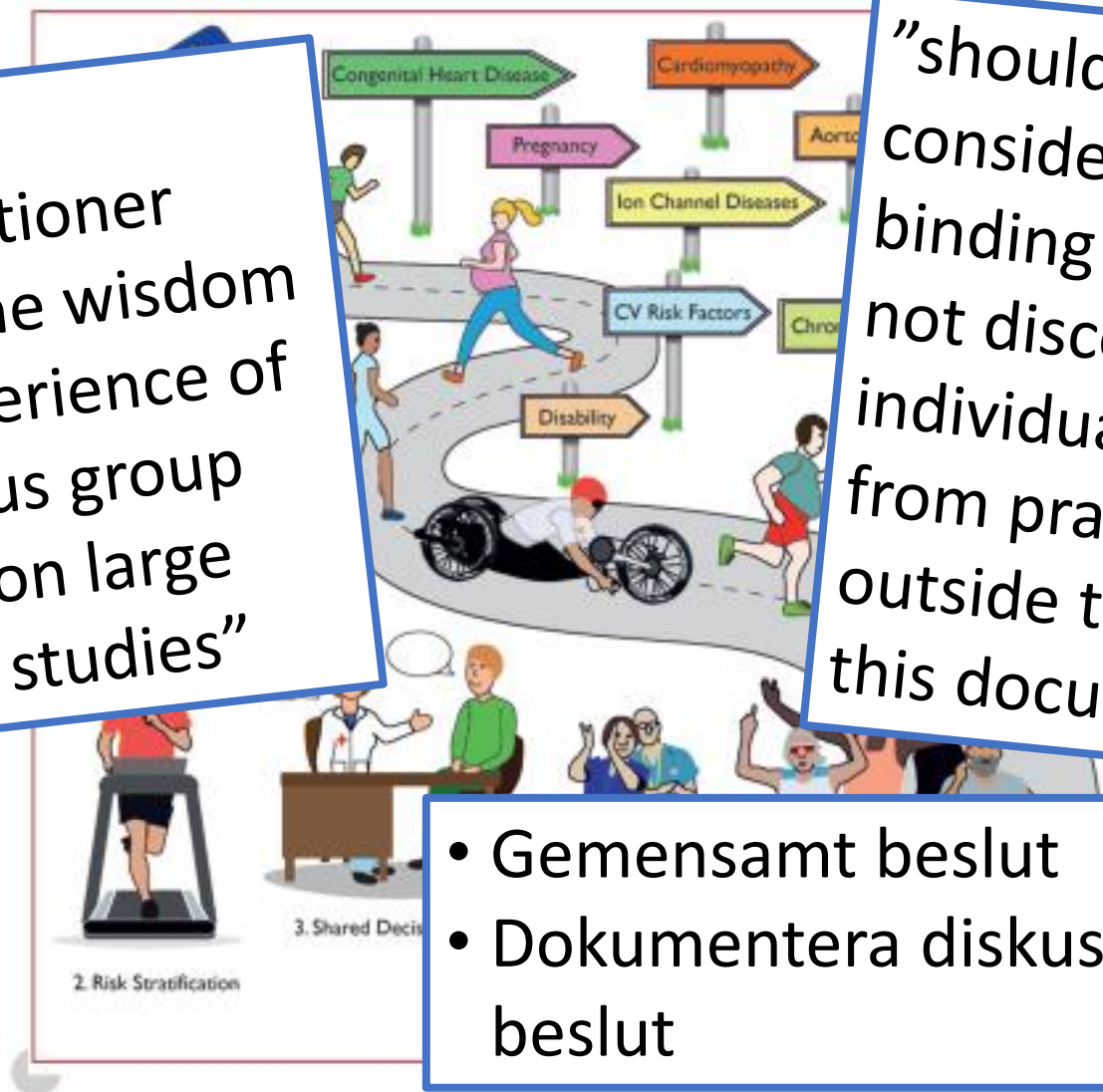


# Huvudbudskap i sport-GL

Ett stort antal rekommendationer bygger på "the wisdom and vast experience of the consensus group rather than on large prospective studies"

"should not be considered legally binding and should not discourage individual physicians from practising outside the remit of this document"

- Gemensamt beslut
- Dokumentera diskussion o beslut



# PSVT och träning

- PSVT (AVNRT, Fokal förmakstakykardi-EAT)
  - Ej livsfarliga arytmier, men kan få snabba frekvenser under fys ansträngning
  - Går bra att träna i allmänhet
  - Instruktionen om vagala manövrar/sätt att bryta tk
- Ev förebyggande betablockad/Calciumflödeshämmare
- Nära till ablation om mkt besvär
- **MEN !!!!**



# PSVT och träning

- Preexcitation
  - Risk för preexciterat förmaksflimmer och plötslig död
- Efyundersökning
  - Riskvärdering och ablation



## Recommendations for exercise and sports participation in individuals with paroxysmal supraventricular tachycardia and pre-excitation (1)

| Recommendations   | Class | Level |
|---|-------|-------|
| In individuals with palpitations, a comprehensive assessment to exclude (latent) pre-excitation, structural heart disease and ventricular arrhythmias is recommended. | I     | B     |
| Participation in all sports activities is recommended in individuals with PSVT without pre-excitation.  | I     | C     |
| Ablation of the accessory pathway is recommended in competitive and recreational athletes with pre-excitation and documented arrhythmias.                             | I     | C     |

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## Recommendations for exercise and sports participation in individuals with paroxysmal supraventricular tachycardia and pre-excitation (2)

| Recommendations  | Class | Level |
|--|-------|-------|
| In competitive/professional athletes with asymptomatic pre-excitation, an EP study is recommended to evaluate the risk for sudden death. | I     | B     |
| In competitive athletes with PSVT but without pre-excitation, curative treatment by ablation should be considered.                       | Ila   | C     |

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# Rekommendationer för friska

| Recommendations  | Class | Level |
|--|-------|-------|
| At least 150 minutes per week of moderate intensity, or 75 minutes per week of vigorous intensity aerobic exercise or an equivalent combination thereof is recommended in all healthy adults.  | I     | A     |
| A gradual increase in aerobic exercise to 300 minutes per week of moderate intensity, or 150 minutes per week of vigorous intensity aerobic exercise, or an equivalent combination is recommended for additional benefits in healthy adults. | I     | A     |
| Regular assessment and counselling to promote adherence and, if necessary, to support an increase in exercise volume over time are recommended.  | I     | B     |
| Multiple sessions of exercise spread throughout the week, i.e. on 4–5 days a week and preferably every day of the week, are recommended.   | I     | B     |



# Rekommendationer för äldre

| Recommendations   | Class | Level |
|---|-------|-------|
| Among adults aged 65 or older who are fit and have no health conditions that limit their mobility, moderate-intensity aerobic exercise for at least 150 min/week is recommended.      | I     | A     |
| In older adults at risk of falls, strength training exercises to improve balance and coordination on at least 2 days a week are recommended.  | I     | B     |
| A full clinical assessment including a maximal exercise test should be considered in sedentary adults aged 65 or older who wish to participate in high intensity activity.            | IIa   | C     |
| Continuation of high and very high intensity activity, including competitive sports, may be considered in asymptomatic elderly athletes (master athletes) at low or moderate CV risk. | IIb   | C     |



# Vad betyder detta?

”Medelintensiv/högintensiv träning”

**TABLE 1** Examples of Moderate- and Vigorous-Intensity Aerobic Activities

| 2020 WHO Physical Activity Guidelines for Aerobic Exercise | Activity <sup>a</sup>                  | Duration (min/wk) |
|--|--|-------------------|
| 150-300 min moderate-intensity aerobic exercise per week   | Walking (2.5 miles/h, moderate pace)   | 150-300           |
|  | Ballroom dancing (slow pace)           | 150-300           |
|  | Gardening and yardwork                 | 113-225           |
|  | Bicycling (light, <10 mph)             | 113-225           |
|  | Brisk walking (3.5 miles/h, fast pace) | 105-209           |
| 75-150 min vigorous-intensity aerobic exercise per week    | Jogging (4.0 miles/h)                  | 75-150            |
|  | Swimming (leisure)                     | 75-150            |
|  | Hiking                                 | 75-150            |
|  | Bicycling (moderate, 12-14 miles/h)    | 56-113            |
|  | Running (6 miles/h)                    | 46-92             |

Examples listed in **Table 1** meet the 2020 World Health Organization (WHO) Physical Activity Guidelines for health benefits. <sup>a</sup>Activity classification based on MET codes from 2011 Compendium of Physical Activities.<sup>110</sup>



# Recommendations for exercise in individuals with premature ventricular contractions or non-sustained ventricular tachycardia

| Recommendations   | Class | Level |
|---|-------|-------|
| In exercising individuals with $\geq 2$ PVCs on a baseline ECG (or $\geq 1$ PVC in the case of high-endurance athletes) thorough evaluation (including a detailed family history) to exclude underlying structural or arrhythmogenic conditions is recommended. | I     | C     |
| Among individuals with frequent PVCs and non-sustained VT a thorough investigation with Holter monitoring, 12-lead ECG, exercise test and suitable imaging is recommended.  | I     | C     |
| It is recommended that all competitive and leisure-time sports activities are permitted, with periodic re-evaluation in individuals without familial or structural underlying disease.  | I     | C     |

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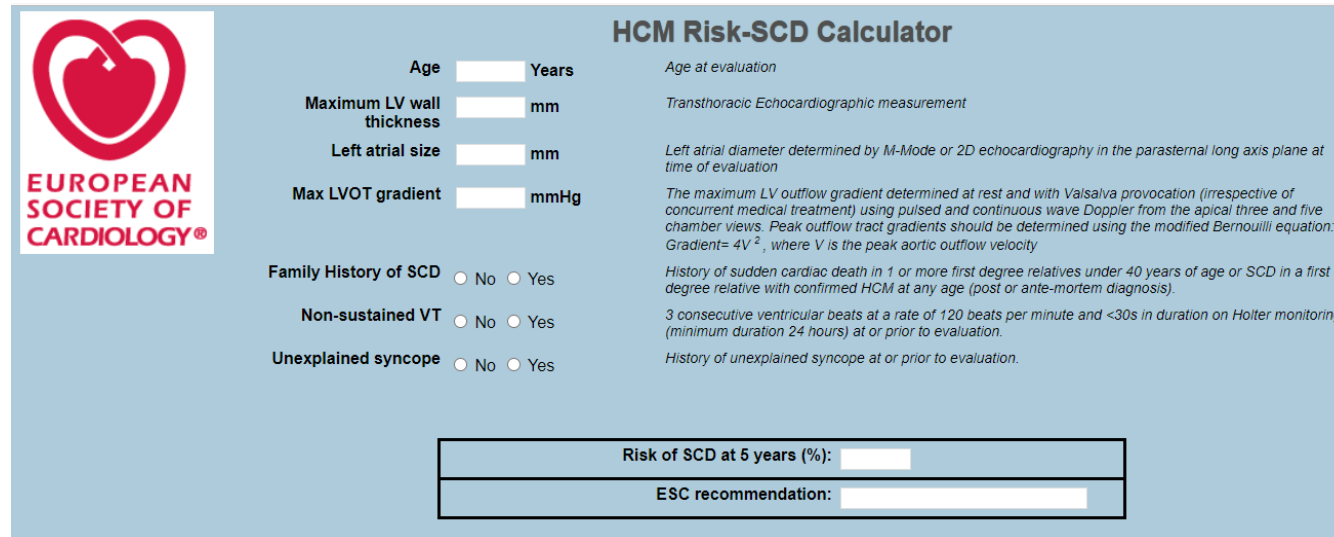
# HCM och träning; riskfaktorer

- Symtom och tidigare anamnes på synkope eller SCD i familjen
- EKO; VK vägg tjocklek, vä förmaksdiameter,
- LVOT-gradient (vila, Valsalva, träning)
- Blodtrycksutveckling under ansträngning
- Ansträngningsutlöst arytm (ergospirometri/Holter)
- Riskscore >4% (årlig arytmirisk)



# HCM och träning

- Riskvärdera med etablerade metoder – HCM Risk-SCD Calculator



**HCM Risk-SCD Calculator**

**Age**  Years *Age at evaluation*

**Maximum LV wall thickness**  mm *Transthoracic Echocardiographic measurement*

**Left atrial size**  mm *Left atrial diameter determined by M-Mode or 2D echocardiography in the parasternal long axis plane at time of evaluation*

**Max LVOT gradient**  mmHg *The maximum LV outflow gradient determined at rest and with Valsalva provocation (irrespective of concurrent medical treatment) using pulsed and continuous wave Doppler from the apical three and five chamber views. Peak outflow tract gradients should be determined using the modified Bernoulli equation: Gradient =  $4V^2$ , where V is the peak aortic outflow velocity*

**Family History of SCD**  No  Yes *History of sudden cardiac death in 1 or more first degree relatives under 40 years of age or SCD in a first degree relative with confirmed HCM at any age (post or ante-mortem diagnosis).*

**Non-sustained VT**  No  Yes *3 consecutive ventricular beats at a rate of 120 beats per minute and <30s in duration on Holter monitoring (minimum duration 24 hours) at or prior to evaluation.*

**Unexplained syncope**  No  Yes *History of unexplained syncope at or prior to evaluation.*

**Risk of SCD at 5 years (%):**

**ESC recommendation:**

- Väg fördelar mot risker - men motionsidrott är positivt och verkar vältolererat!



# DCM och träning

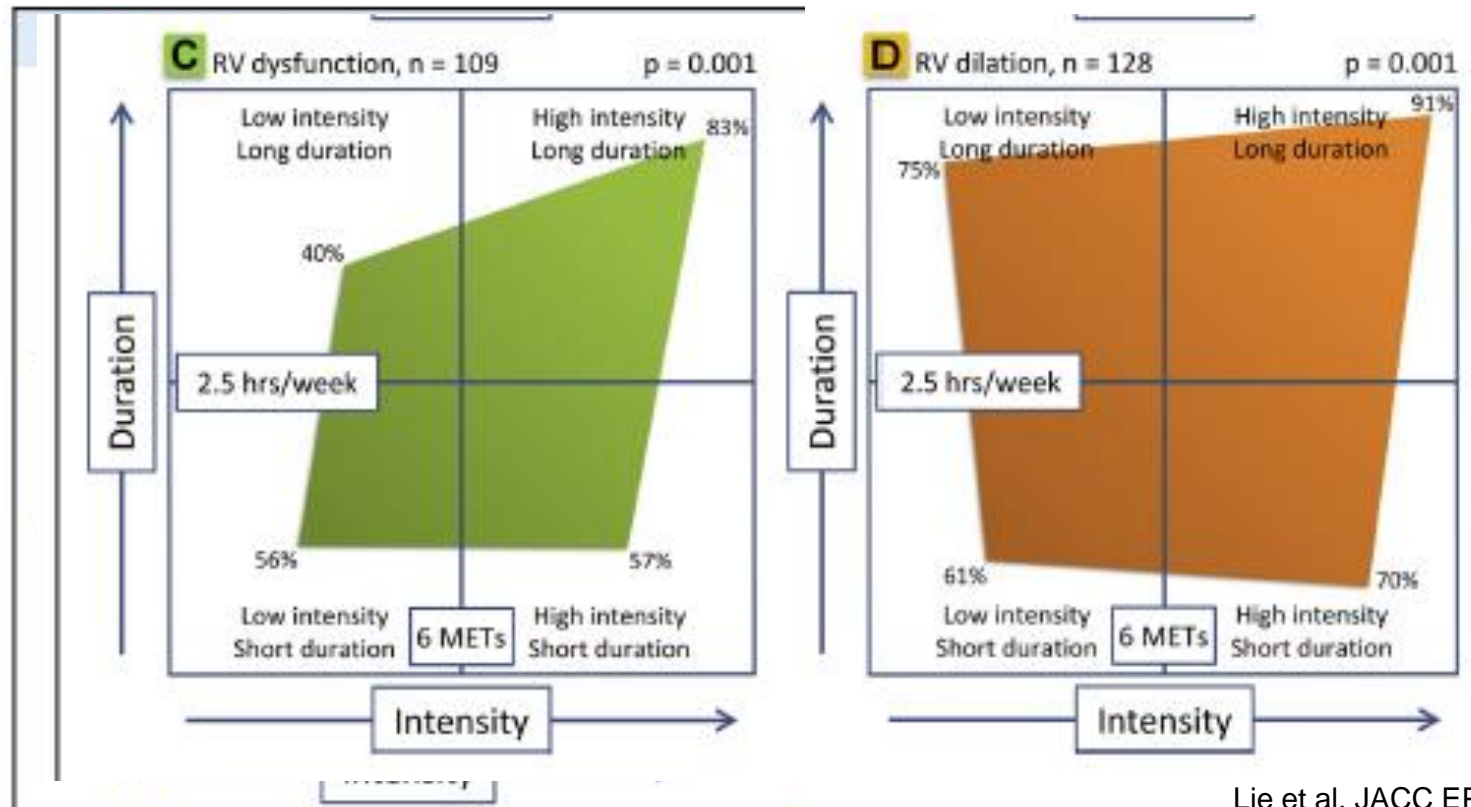
- Gråzon mellan DCM o fysiologisk adaptation till träning
  - Ökad VK-volym, EF 45-55%, ventrikulär arytmi
- Motionsidrott viktigt – låg fysisk kapacitet stark prediktor för hospitalisering o mortalitet!
- Individuella rekommendationer avseende tid o intensitet
- Följ med arbetsprov/ergospiometri





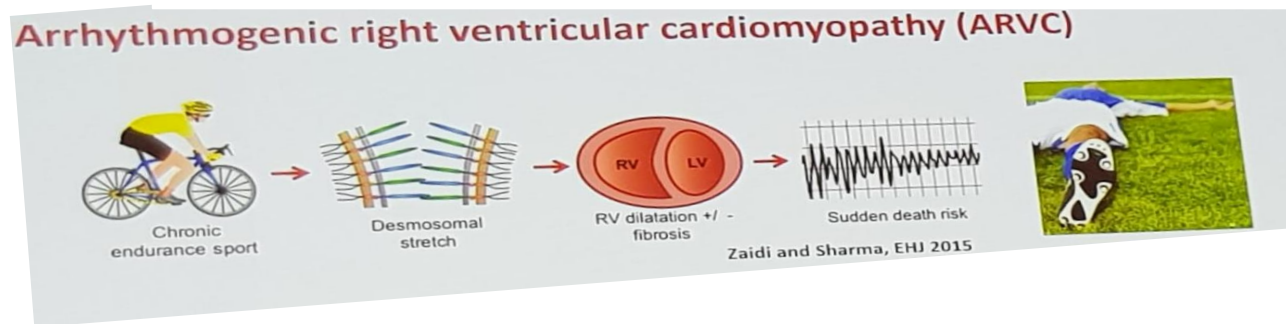
# ARVC och träning

- Högintensiv träning tydligt farlig för arytm
- Men RV tål även lägre intensitet mindre väl



# ARVC och träning

- Träning ger ytterligare progress av RV/LV dysfunktion
  - Gäller även genpositiva utan eller med mild sjukdomsbild
- Ökad risk för ventrikulär arytm
- Högintensitetsträning farligast
  - Dock kan lågintensitetsträning även under längre duration accepteras



# 2022 guidelines on VT and SCD

| Recommendations   | Class <sup>a</sup> | Level <sup>b</sup> |
|---|--------------------|--------------------|
| Avoidance of high-intensity exercise is recommended in patients with a definite diagnosis of ARVC. <sup>683–685</sup>                                     | <b>I</b>           | <b>B</b>           |
| Avoidance of high-intensity <sup>c</sup> exercise may be considered in carriers of ARVC-related pathogenic mutations and no phenotype. <sup>683,687</sup> | <b>IIb</b>         | <b>C</b>           |
| Beta-blocker therapy may be considered in all patients with a definite diagnosis of ARVC.   | <b>IIb</b>         | <b>C</b>           |

- Riskkalkylator online: [ARVCrisk.com](http://ARVCrisk.com)
- För pat med klar ARVC-diagnos



# Primär arytmisjukdom

- Långt QT syndrom
  - Tränande bör stå på betablockad om symtom el QTc-förl
  - Genotyp pos fenotyp neg kan tävla om normal QTc
  - QTc >500 el genpos med QTc >470/480 ms bör ej tävla
- CPVT (katekolaminerg polymorf VT)
  - Ansträngningsbegränsning första linjens behandling
- Brugadas syndrom
  - Undvik hög kroppstemperatur



# Pacemaker/CRT/ICD

## Recommendations for exercise in individuals with pacemakers and implantable cardioverter defibrillators(1)



| Recommendations  | Class | Level |
|--|-------|-------|
| It is recommended that individuals with implanted devices with/without resynchronization and underlying disease follow the recommendations pertaining to the underlying disease.         | I     | B     |
| Participation in sports and exercise (except collision sports) should be considered in individuals with pacemaker therapy who do not have pathological substrates for fatal arrhythmias. | IIa   | C     |
| Prevention of direct impact to the implanted device by adapting the site of lead and/or device implantation, padding, or restricting direct impact sports should be considered.          | IIa   | C     |

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# Take home message



# Sammanfattning (1)

## Arytmi

- Hos atleter med PSVT värdera ev preexcitation o ablatera om det finns
- Om mycket VES – uteslut strukturell eller familjär arytmisjukdom
- Ihållande VT – rekommendationer utifrån bakomliggande genes
- Pat med pacemaker uppmuntras till aktivitet, men anpassat till underliggande sjukdom/tillstånd
- Pat med ICD kan tillåtas såväl motionsidrott som tävlingsidrott efter individuell bedömning (risk för tillslag i samband med sportutövn, inkl risk om synkope)



# Sammanfattning (2)

## Kardiogenetiska diagnoser

### Kardiomyopati

- Om genbärare eller endast mild fenotyp o inga symtom – tävlingsidrott kan tillåtas
- ARVC undantaget – avråd alltid från högintensiv träning o tävlingsidrott

### Jonkanalsjukdomar

- Individuella beslut





# Tack från HRG!

Erik Benedik, Umeå

Helena Malmberg, Uppsala

Anette Jemtrén, Stockholm

Anna Björkenheim, Örebro

Karl-Jonas Axelsson, Göteborg

David Mörtsell, Lund



Anneli  
Svensson,  
Linköping

Michael  
Ringborn,  
Karlskrona

