Physical Activity and Sports

- Pediatric Surgery
- Amsterdam 2016
- ERIK THAULOW

VG sporten

< Sporten | Tippeligaen | 1.div | Pr.League | Ch.League | Eu.League | Spill | MER FOTB.

Landslagsspiller døde etter kollaps på banen

- Helstad var lagkamerat: – Sykt tragisk
- Gamleklubben: – Vi vil aldri glemme deg, vennen





VG NYHETER

Sørger over død fotballspiller (15)

** Idrettsleder: - Vi aner ikke hva som skjedde
** Vil vurdere kjøp av hjertestarter etter dødsfallet



THE NEW

DEATH ON THE BASKETBALL COURT

BY BRIAN HOSKIN

ALJAZEERA AMERICA

NEWS OPINION VIDEO

SECTIONS U.S. INTERNATIONAL ECONOM

TRENDING ELECTION 2016 BLACK LIVES MA

FLAGSHIP BLOG

SHOWS / AMERICA TONIGHT / THE FLAGSHIP

nrk NYHETER SPORT TV RADIO DISTRIKT

10:32:59 | Sport Resultater Sendeplan Helt Ramm Fotball Videoklipp

'Great kid, athlete' dies after high school football game

By Ray Sanchez, CNN



Dødsfallene som rystet idretten

Alexander Dale Oens sjokkerende død er ett av flere, ofte fatale tilfeller av hjertestans som har rammet unge toppidrettsutøvere.



nrk NYHETER SPORT TV RADIO DISTRIKT

10:30:47 | Sport Resultater Sendeplan Helt Ramm Fotball Videoklipp

– Den tyngste dagen for norsk svømmesp noensinne

Tidenes beste norske svømmer, Alexander Dale Oen (26), døde tirsdag morgen. Svømmeren ble funnet livløs på baderomsgulvet under en treningsleir i Flagstaff, Arizona i USA.



iCromsø



Fransk friidrettsstjerne døde plutselig

Svensk fotballspiller døde på banen

Fotballspiller Victor Brännström (29) gjorde comeback for det svenske andredivisjonslaget Piteå i sommer. Søndag kollapset han på banen, og fikk aldri igjen bevisstheten.

– Vi er en klubb i sorg, vi vet ikke hvordan vi skal gå videre, uttalte Piteå idrettsforenings talsmann Christer Berglund, ifølge den svenske avisa Aftonbladet.

Ifølge svenske medier falt fotballspilleren plutselig om på banen. 29-åringen hadde akkurat scoret et mål mot Umedalen, da han falt sammen på banen søndag ettermiddag.



Brännström var som ungdomsspiller et lovende talent og spilte for flere av Sveriges juniorlandslag.



NOV 20

The biggest killer of young athletes: Sudden cardiac arrest

Norske idrettsstjerner som dø Grusomt. En forferdelig traged

CHD and Physical Activity

- Few restrictions on physical activity in CHD patients in Norway
- Arrhythmias, severe heart failure and PHT are relative contraindications
- Injury related to collision has to be remembered

CHD and Physical Activity

- Recommendations
- Clinical history, warning episodes
- Specific lesions or situations

Cardiopulmonary exercise testing in GUCH

- Long warm-up periods improve exercise capacity
- Most GUCH patients know when to stop exercise.
- An exercise-test has several aims
- Family members should be present during exercise-testing
- It is important to direct GUCH patients to realistic sports

monitoring, and exercise testing. For patients in whom data are unclear with regard to hemodynamic abnormalities or ventricular function, cardiac catheterization may be necessary.

Recommendations:

1. **Selected patients can engage in low and moderate static/low dynamic competitive sports (classes IA and IIA) provided there is:**
   - **Mild or no cardiac chamber enlargement on chest radiograph, echocardiography, or CMR**
   - **No history of atrial flutter, supraventricular tachycardia, or ventricular tachyarrhythmia**
   - **No history of syncope or other cardiac symptoms**
   - **A normal exercise test defined as normal duration, workload, heart rate, ECG, and blood pressure response for age and gender.**
2. **Patients not in this category require an individualized exercise prescription.**

Postoperative arterial switch for TGA. A significant cohort of patients have had arterial switch repair of TGA and are now old enough to engage in competitive sports. These patients have a low prevalence of ventricular dysfunction, arrhythmia with symptoms, and hemodynamic sequelae (with the possible exception of pulmonary artery or anastomotic stenosis and neoaortic root dilation). Only limited exercise data are available.

Recommendations:

1. **Athletes with normal ventricular function, normal exercise test, and no atrial or ventricular tachyarrhythmias can participate in all sports.**
2. **Athletes with more than mild hemodynamic abnormalities or ventricular dysfunction can participate in low and moderate static/low dynamic competitive sports (classes IA, IB, IC, and IIA), provided that their exercise test is normal.**

Congenitally corrected transposition of the great arteries (CCTGA). Usually, CCTGA is associated with other congenital malformations of the heart, such as ventricular septal defect, pulmonary stenosis, and systemic AV valve abnormalities, which may dictate the level of participation in competitive sports. These patients are at risk for development of supraventricular tachycardia and spontaneous AV block.

Recommendations:

1. **Asymptomatic patients with CCTGA without other cardiac abnormalities may be eligible for participation in class IA and IIA sports if there is no systemic ventricle enlargement, no evidence of atrial or ventricular tachyarrhythmia on ambulatory ECG moni-**

2. **Periodic re-evaluation is important to detect development of arrhythmias and deterioration of systemic (right) ventricular function and systemic (tricuspid) AV valve regurgitation. In particular, sports with a large static component (classes IIIA, IIIB, IIIC) such as power weightlifting are not recommended.**

Postoperative Fontan operation. The Fontan operation is characterized by systemic venous return bypassing the right ventricle. The operation is used for the long-term palliation of patients with tricuspid atresia or other complex types of single ventricle. Although many patients improve clinically after the Fontan operation, they usually have limited exercise capacity and reduced cardiac output at rest and during exercise (13). Postoperative arrhythmias have been associated with significant morbidity and mortality. Diagnostic evaluation before sports participation should include a chest radiograph, ECG, echocardiography or CMR, and exercise testing with oxygen saturations.

Recommendations:

1. **Athletes can participate in low-intensity competitive sports (class IA).**
2. **Athletes can engage in normal ventricular funct**

Ebstein's anomaly. A great d severity of this malformation variable degrees of tricuspid enlargement caused by a malfo valve. Cyanosis may be prese shunting. Even mild cases may arrhythmias. Severe cases can disability and increased risk fo

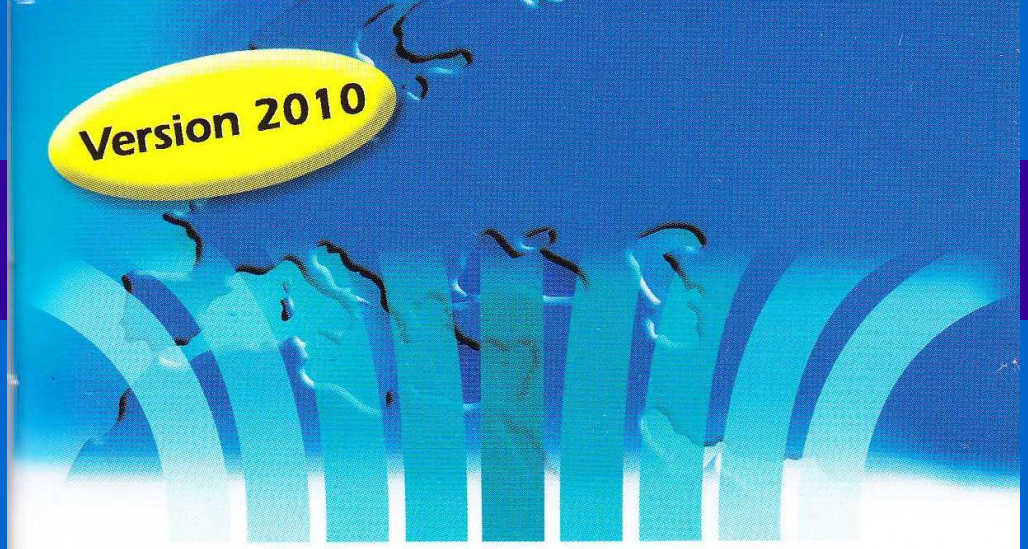
Recommendations:

1. **Athletes with a mild expr without cyanosis, with n and with no evidence of rhythmias can participate**
2. **Athletes with tricuspid severity can participate i sports (class IA) if there i on ambulatory ECG Ho isolated premature contr**
3. **Athletes with severe Ebst from all sports participat repair, low-intensity com be permitted if tricuspid mild, cardiac chamber siz echocardiography is not symptomatic atrial or v are not present on ambul**

AHA 2005

Recommendations:

1. **Selected patients can engage in low and moderate static/low dynamic competitive sports (classes IA and IIA) provided there is:**
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ESC POCKET GUIDELINES

Committee for Practice Guidelines

To improve the quality of clinical practice and patient care in Europe

GUCH

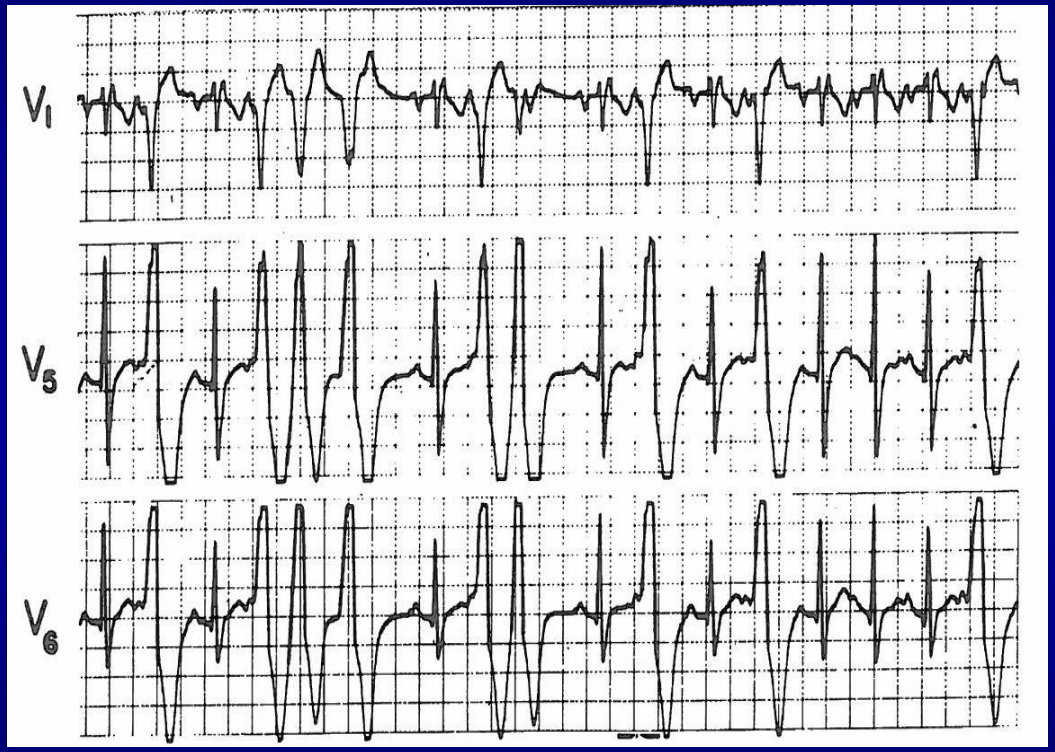
GUIDELINES ON THE MANAGEMENT OF GROWN-UP CONGENITAL HEART DISEASE

For more information

www.escardio.org/guidelines

EUROPEAN SOCIETY OF CARDIOLOGY®

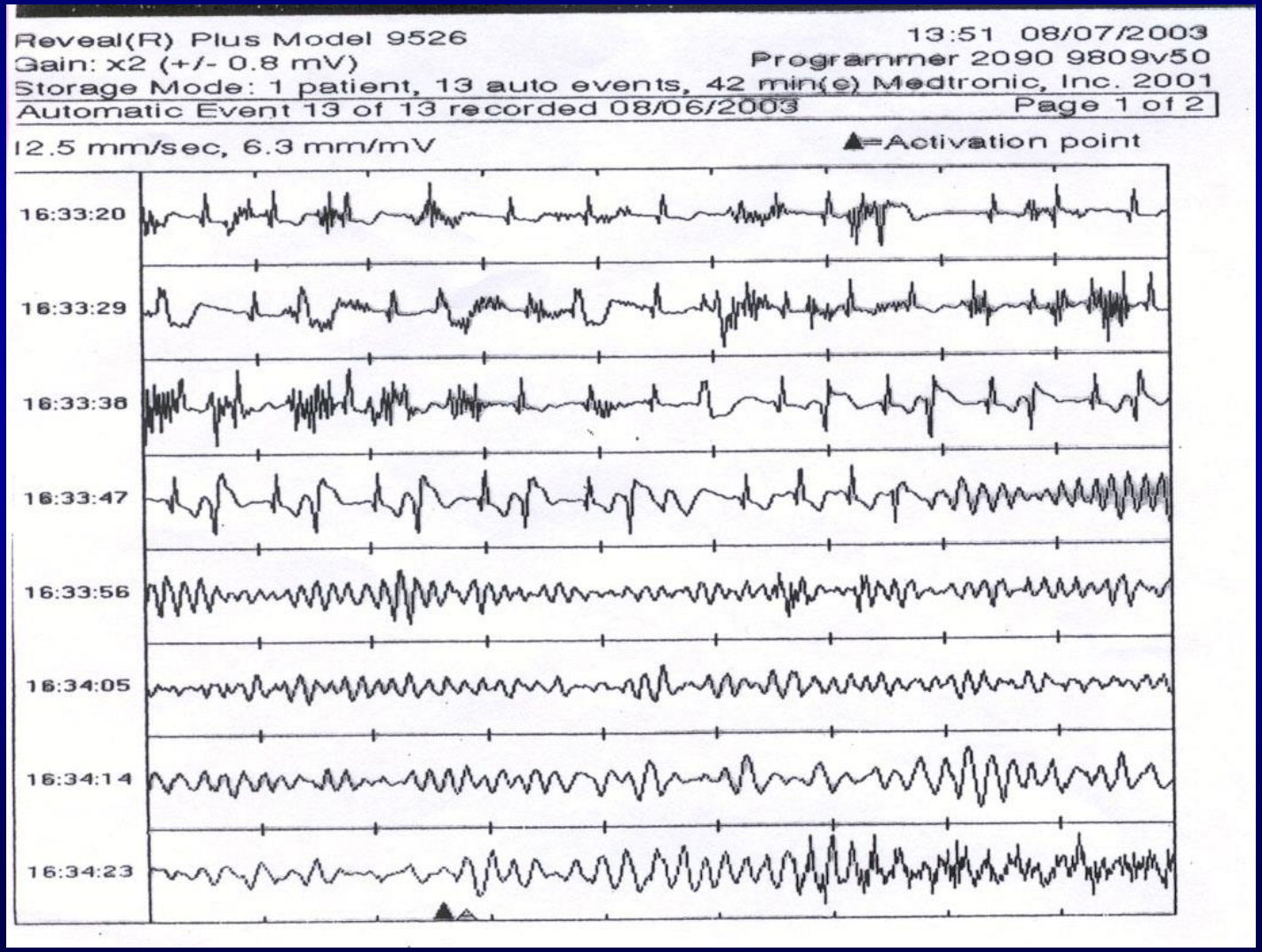
Post exercise in Post TOF repair



EXERCISE and RISK

- Arrhythmias
  - Postoperative arrhythmias
  - Long QTc- syndrome
  - ARVC
  - Catecholaminergic arrhythmias

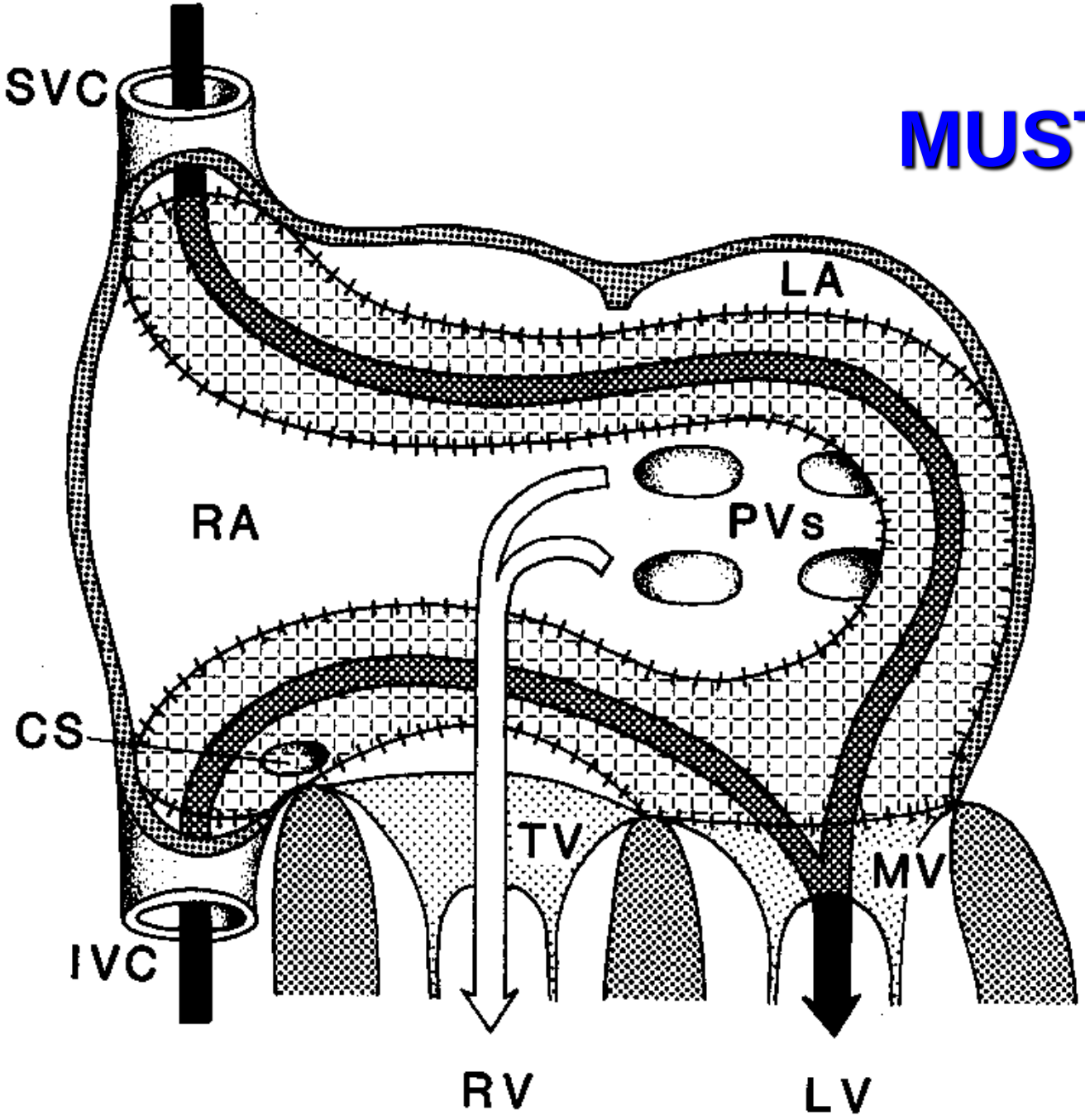
Exercise and arrythmias in GUCH

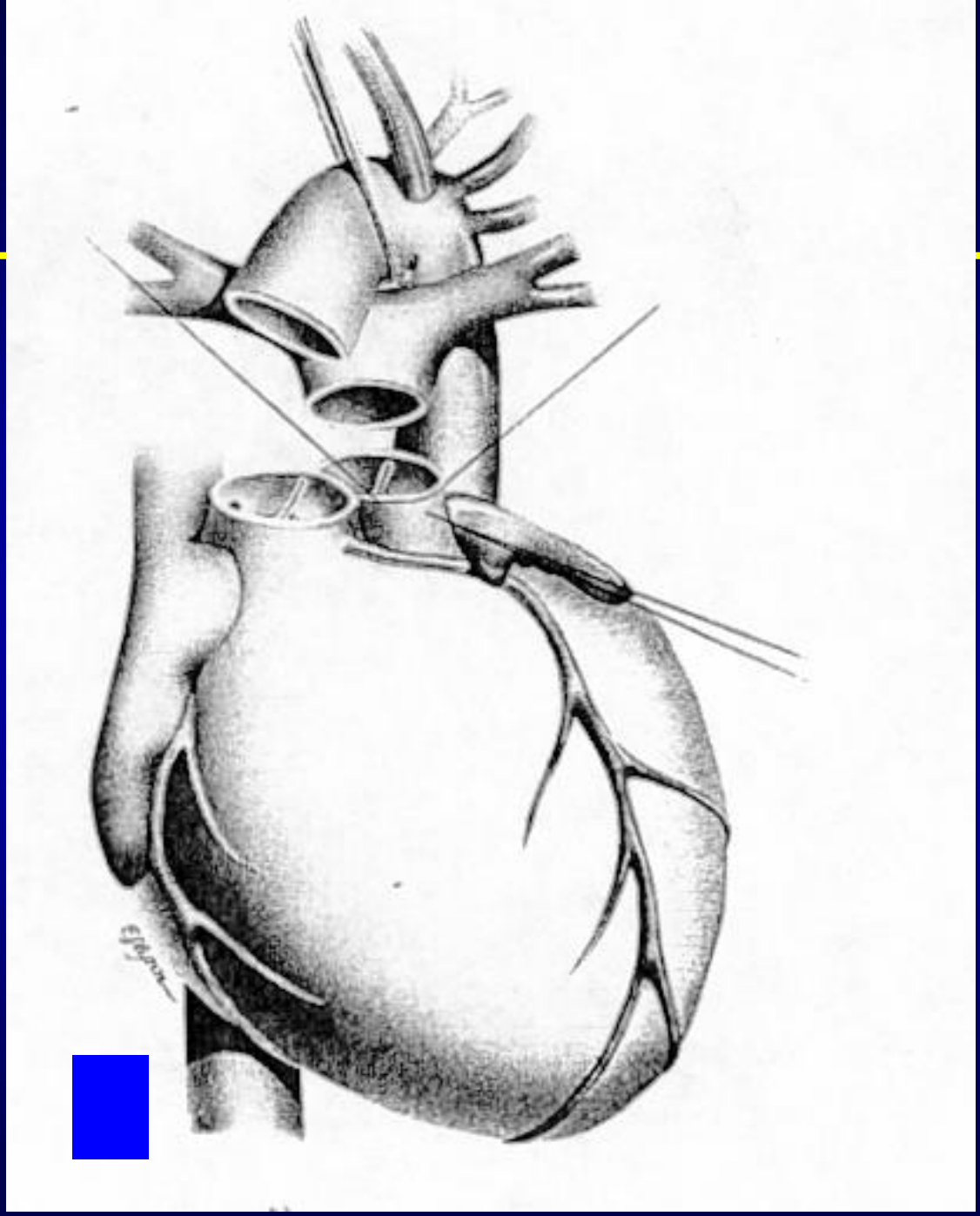


EXERCISE and RISK

- Cardiac Output failure
  - LVOTO, AS, CoA
  - Preload failure (PHT, Senning)
  - Cardiomyopathy
  - Myocardial ischemia

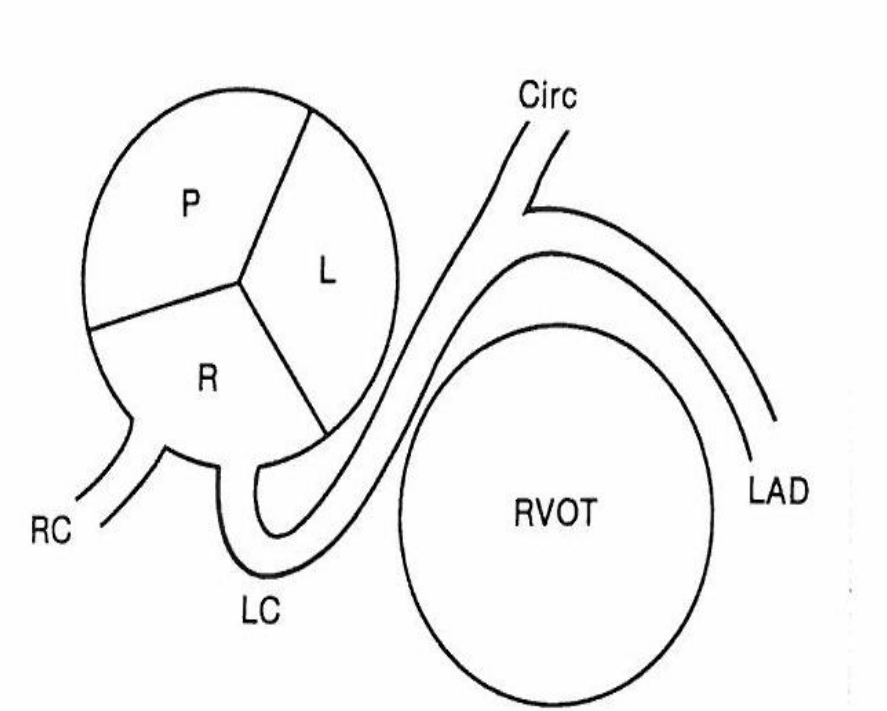
MUSTARD



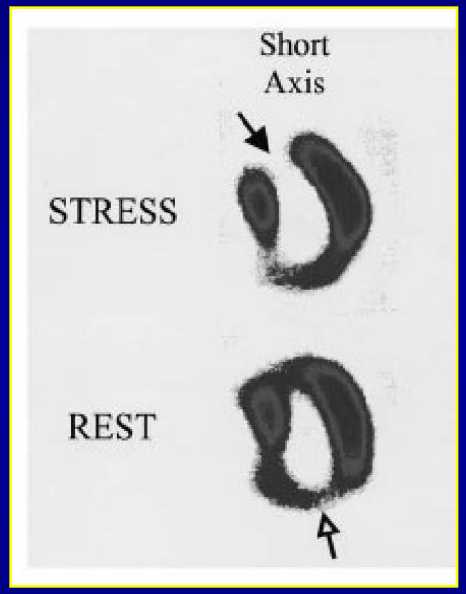


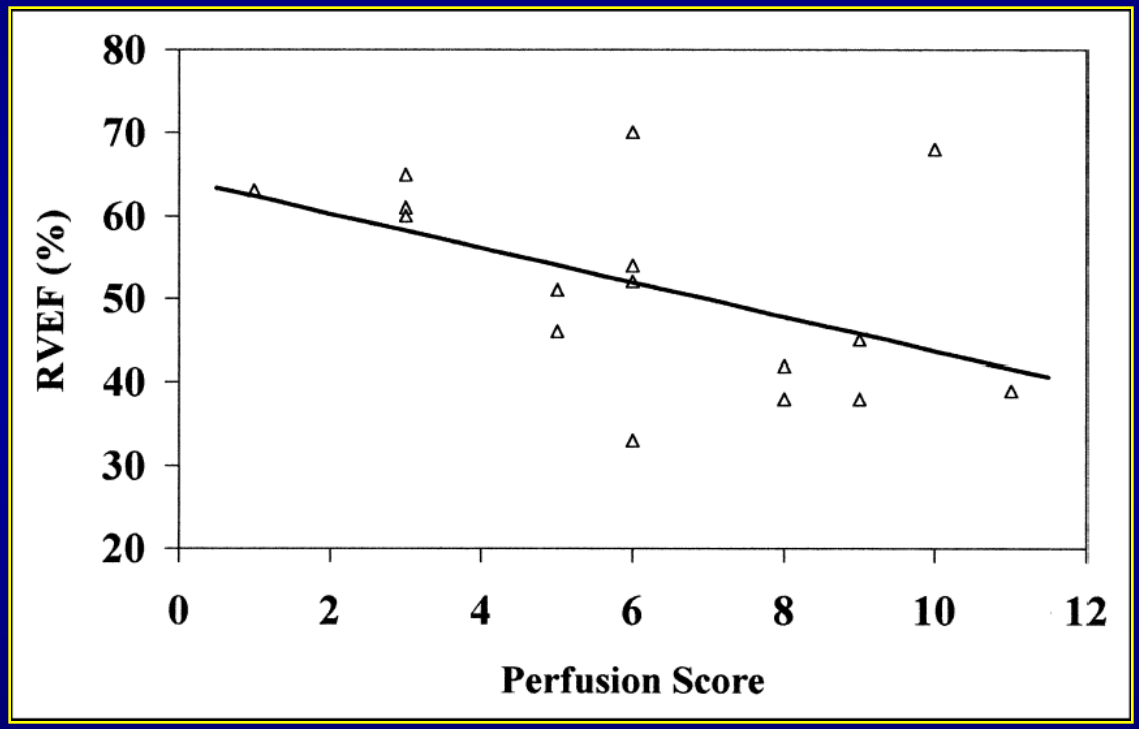
Surgery of the Chest, edn 5. Saunders; 1990

Coronary Artery Compression



Systemic RV: ischemia

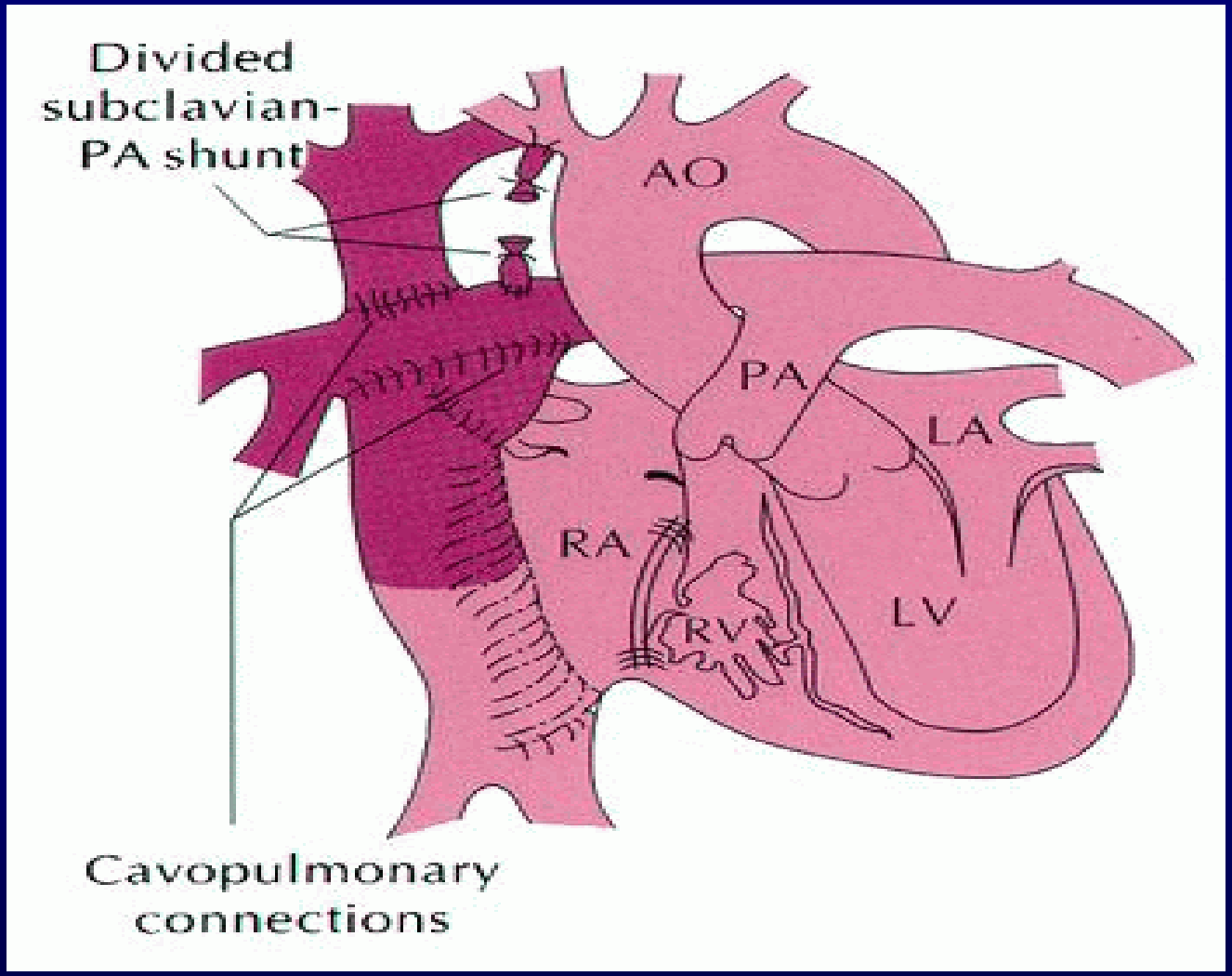




- 20 pts CCTGA (15 yrs)

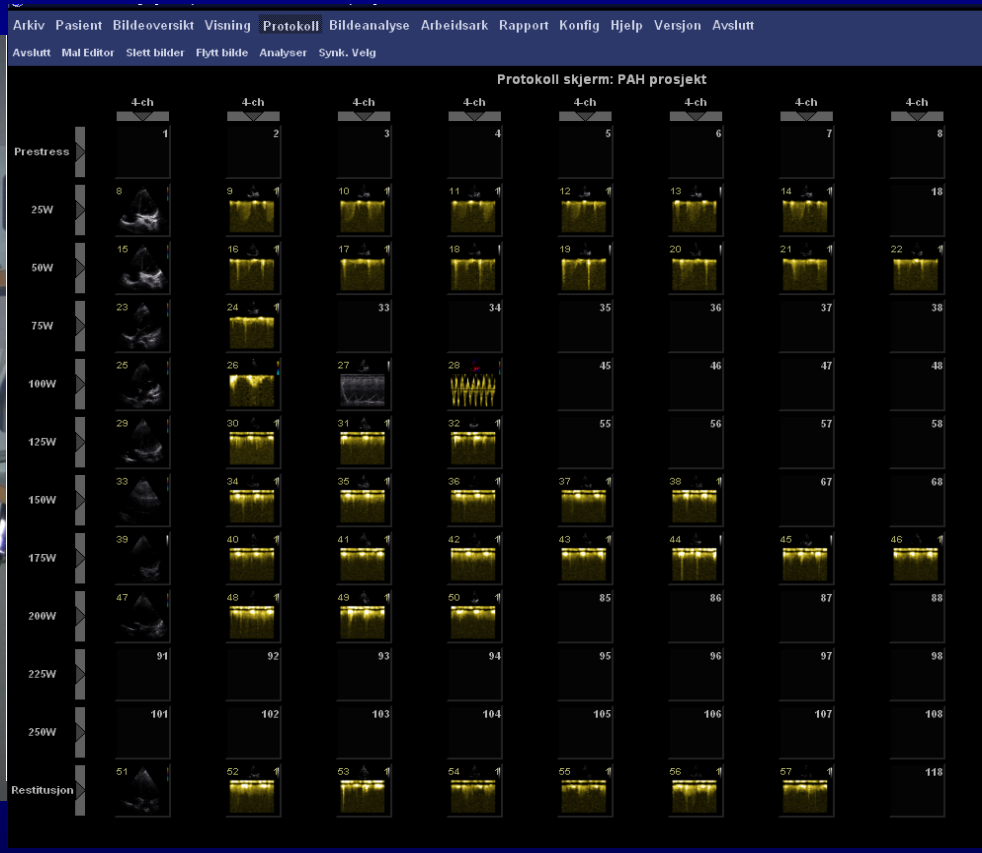
Hornung AJC 1999

FONTAN CIRCULATION

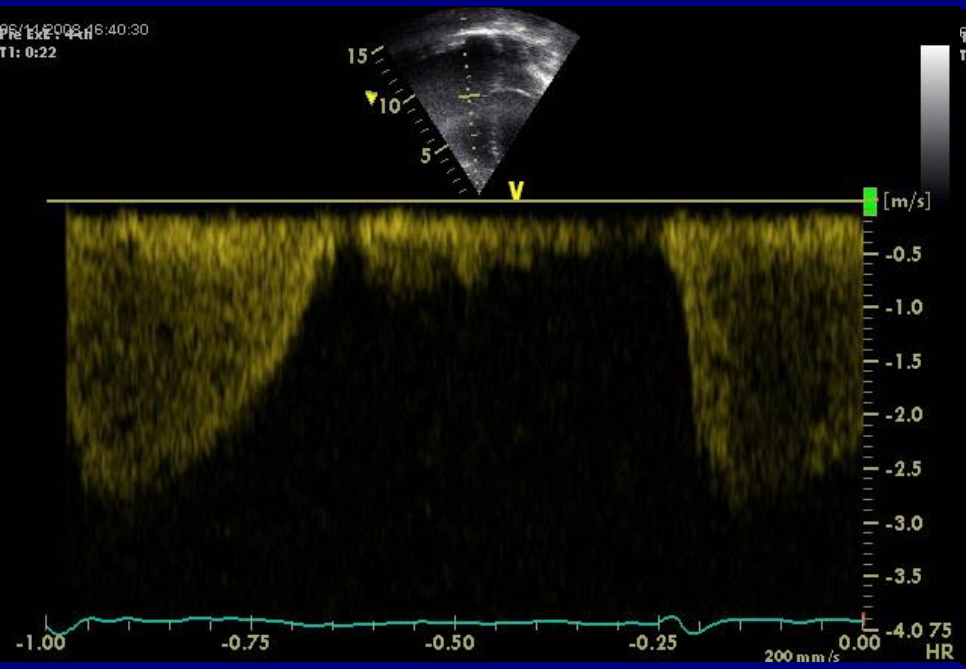


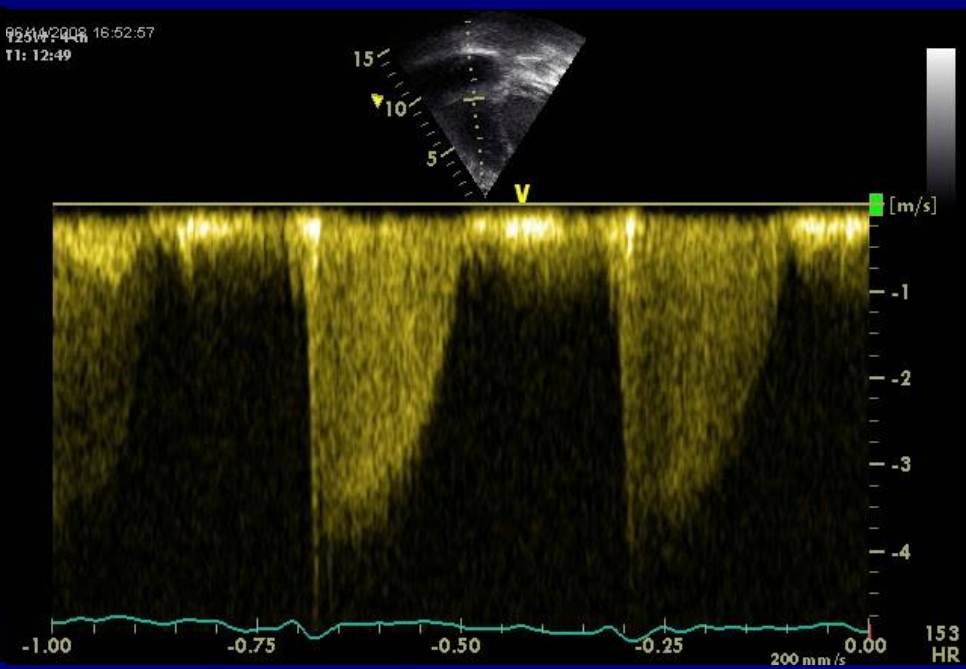
Exercise testing





VSD-repaired





Pre-exercise:

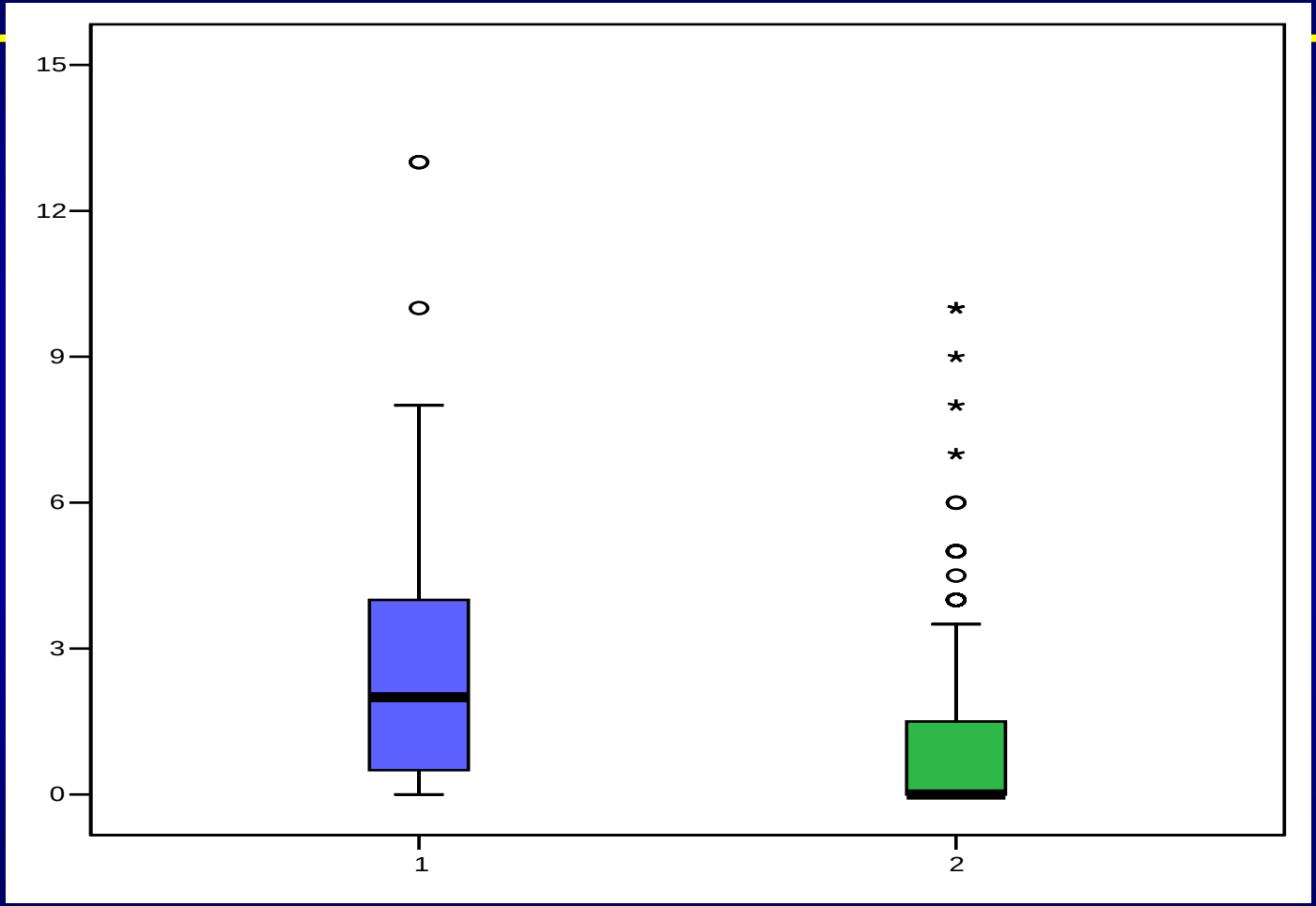
2,6 m/s (= 31 mmHg PASP)

125 Watt:

4,0 m/s (= 68 mmHg PASP)

Neurology and CHD

Balance

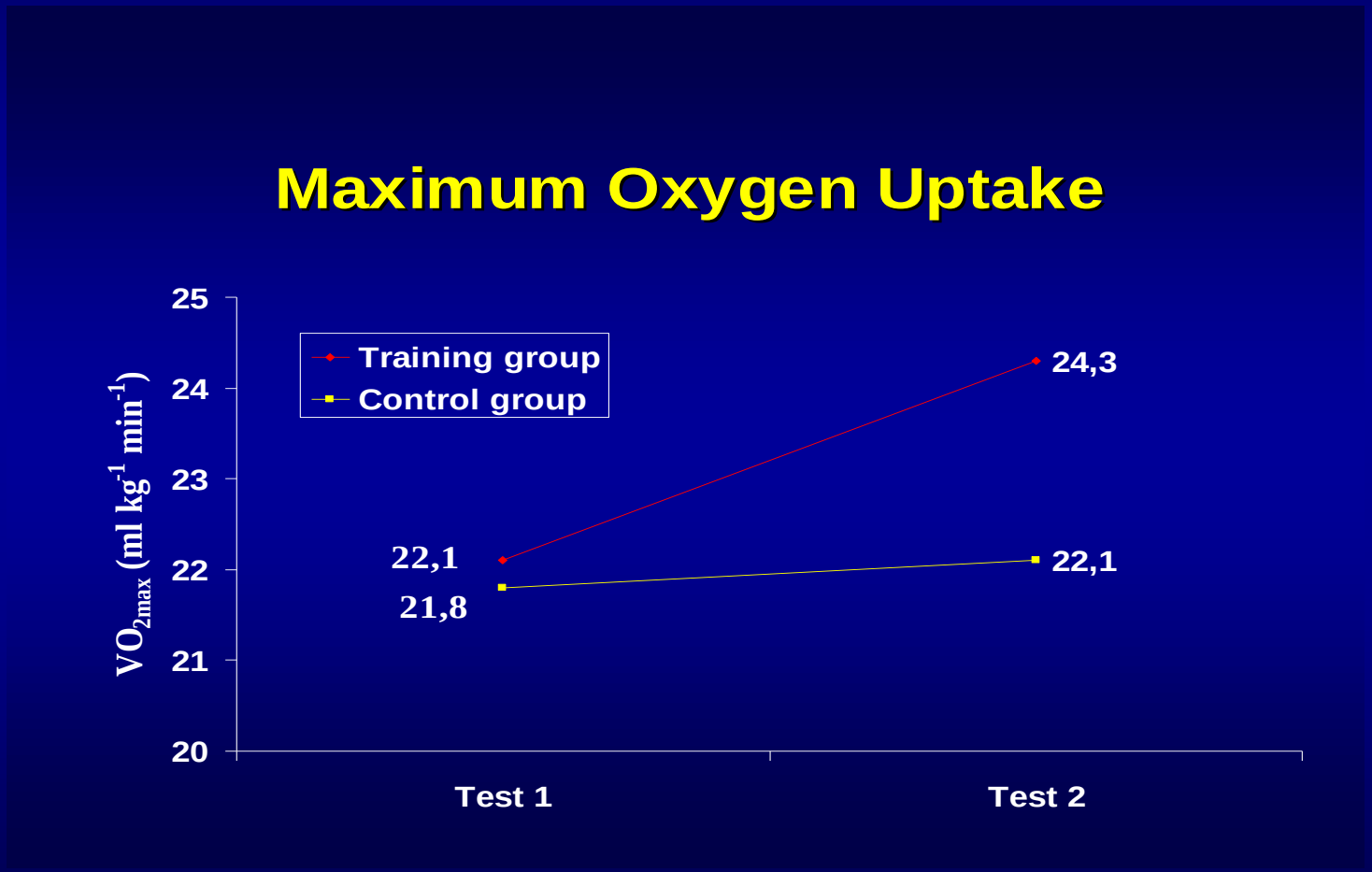


CHD n=65

Healthy n=367

Rikshospitalet
Universitetsklinikk

GUCH. Effect of training



European Heart Journal (2016) **37**, 621–626
doi:10.1093/eurheartj/ehv478

CLINICAL RESEARCH
Congenital heart disease

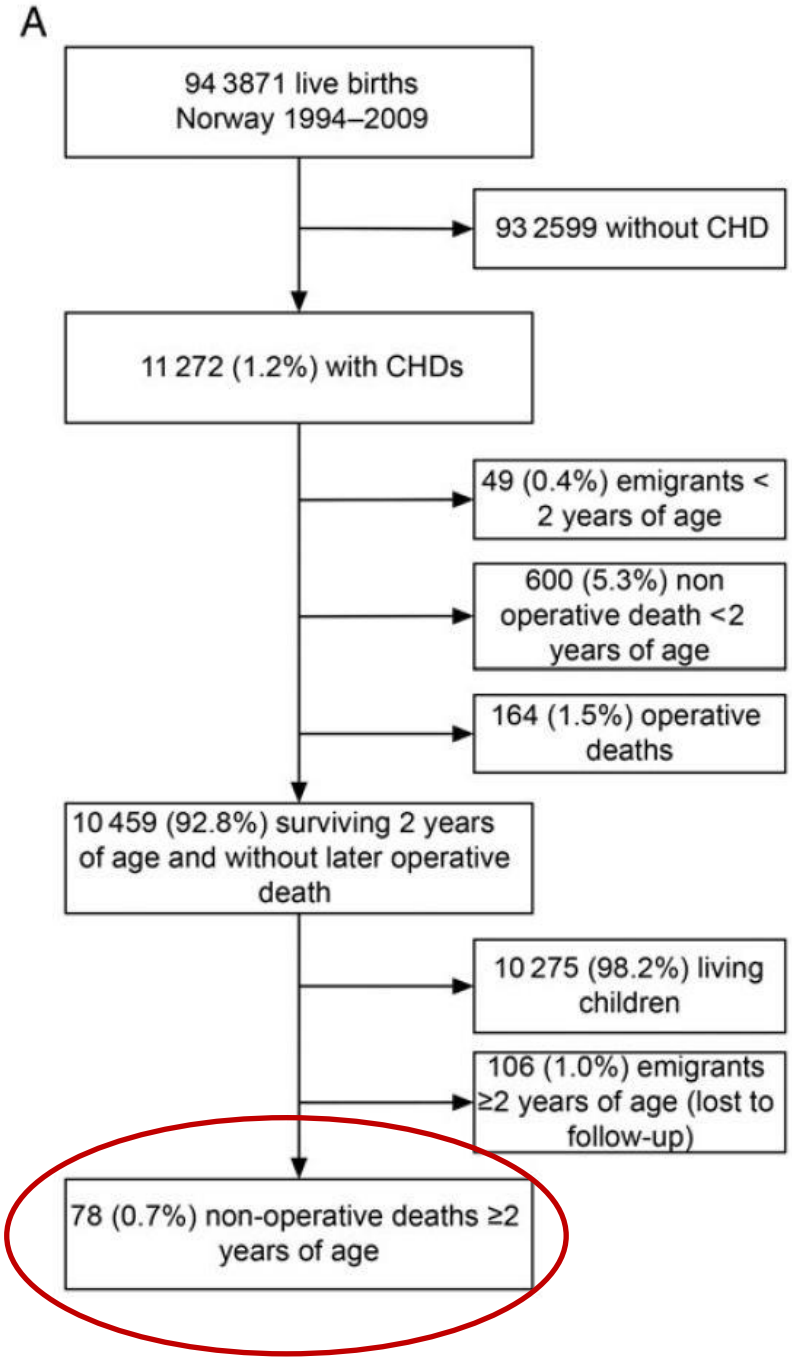
Sudden unexpected death in children with congenital heart defects

Jarle Jortveit[1,2]*, Leif Eskedal[3], Asle Hirth[4], Tatiana Fomina[5], Gaute Døhlen[6], Petter Hagemo[6], Grethe S. Tell[5,7], Sigurd Birkeland[8], Nina Øyen[5,9], and Henrik Holmstrøm[2,6]

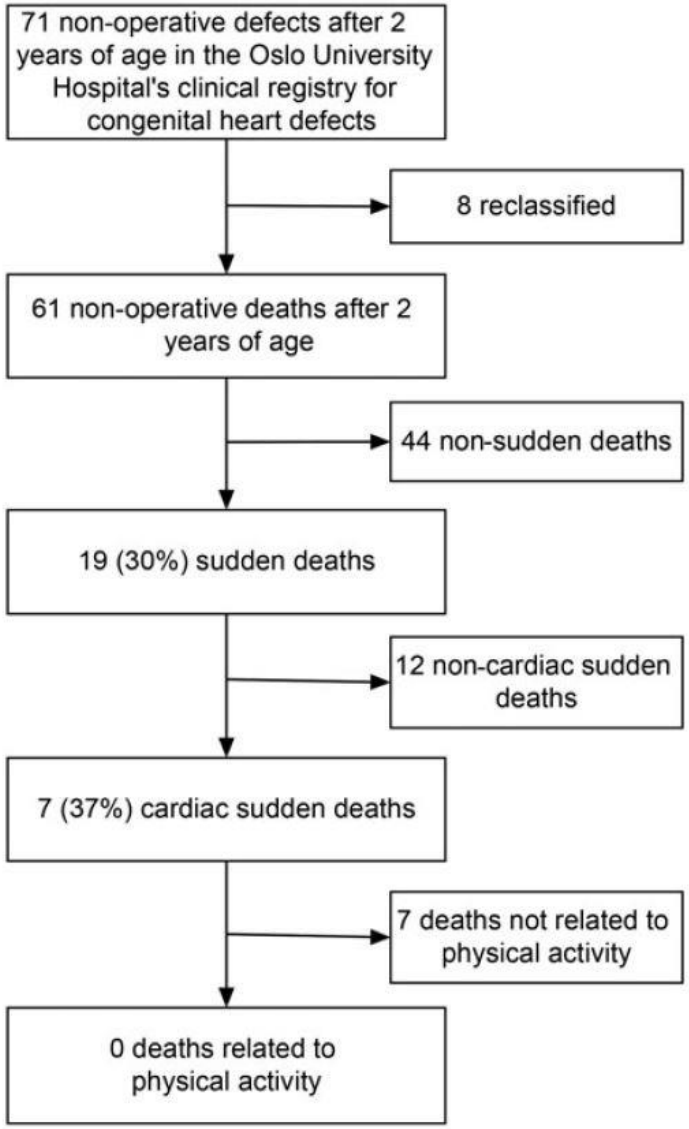
[1]Department of Cardiology, Sørlandet Hospital, PO Box 783, Stoa, 4809 Arendal, Norway; [2]Institute of Clinical Medicine, University of Oslo, Oslo, Norway; [3]Research Department, Sørlandet Hospital, Kristiansand, Norway; [4]Department of Pediatrics, Haukeland University Hospital, Bergen, Norway; [5]Department of Global Public Health and Primary Care, University of Bergen, Bergen, Norway; [6]Women's and Children's Department, Oslo University Hospital, Oslo, Norway; [7]Division of Epidemiology, Norwegian Institute of Public Health, Bergen, Norway; [8]Department of Cardiothoracic Surgery, Oslo University Hospital, Oslo, Norway; and [9]Center for Medical Genetics and Molecular Medicine, Haukeland University Hospital, Bergen, Norway

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See page 627 for the editorial comment on this article (doi:10.1093/eurheartj/ehv523)


A
94 3871 live births
Norway 1994–2009
93 2599 without CHD
11 272 (1.2%) with CHDs
49 (0.4%) emigrants < 2 years of age
600 (5.3%) non operative death <2 years of age
164 (1.5%) operative deaths
10 459 (92.8%) surviving 2 years of age and without later operative death
10 275 (98.2%) living children
106 (1.0%) emigrants ≥2 years of age (lost to follow-up)
78 (0.7%) non-operative deaths ≥2 years of age

B


71 non-operative defects after 2 years of age in the Oslo University Hospital's clinical registry for congenital heart defects
8 reclassified
61 non-operative deaths after 2 years of age
44 non-sudden deaths
19 (30%) sudden deaths
12 non-cardiac sudden deaths
7 (37%) cardiac sudden deaths
7 deaths not related to physical activity
0 deaths related to physical activity

19 sudden unexpected deaths:

- 12 with severe comorbidity
- 5 acute infections

7 probable cardiac deaths:

- 6 with severe CHDs, all operated
- Arrhytmias suspected in all 7

0

During physical activity?



Missed cases because of resuscitation?

- Data check for cardiac arrest- 2 cases resuscitated during sports
- 2 cases with ICD; no events

No impact on results!

Conclusions:

- Sudden unexpected death was rare among children 2–18 years old with CHDs
- Comorbidity was common among those who died
- Sudden unexpected death rarely occurs during physical activity in children with CHDs

The benefit of physical activity outweighs the low risk of death!

CHD and Physical Activity

- Few restrictions on physical activity in CHD patients
- Arrhythmias, severe heart failure and PHT are relative contraindications
- Injury related to collision has to be remembered