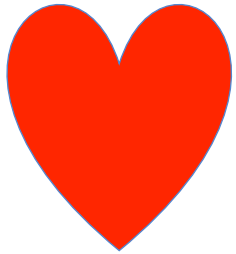
Hjärtscreening av idrottare



Mats Börjesson, Professor, MD, FESC, FACC, FACSM

Head of Center for Health and Performance (CHP),Göteborgs University, Inst Neurophysiology and Physiology, Sahlgrenska Academy & Sahlgrenska University Hospital/Östra, Göteborg

Causes of SCD in the young

Hypertrophic cardiomyopathy (HCM)

Other cardiomyopathies (ARVC)

Myocarditis, 3-7%

Coronary artery anomaly-CAA, 5-20%

Primary electrical disease (LQT, SQT, Brugada, WPW, PCVT)- 50% of ”normal hearts”?

Other structural heart conditions, 3-8%

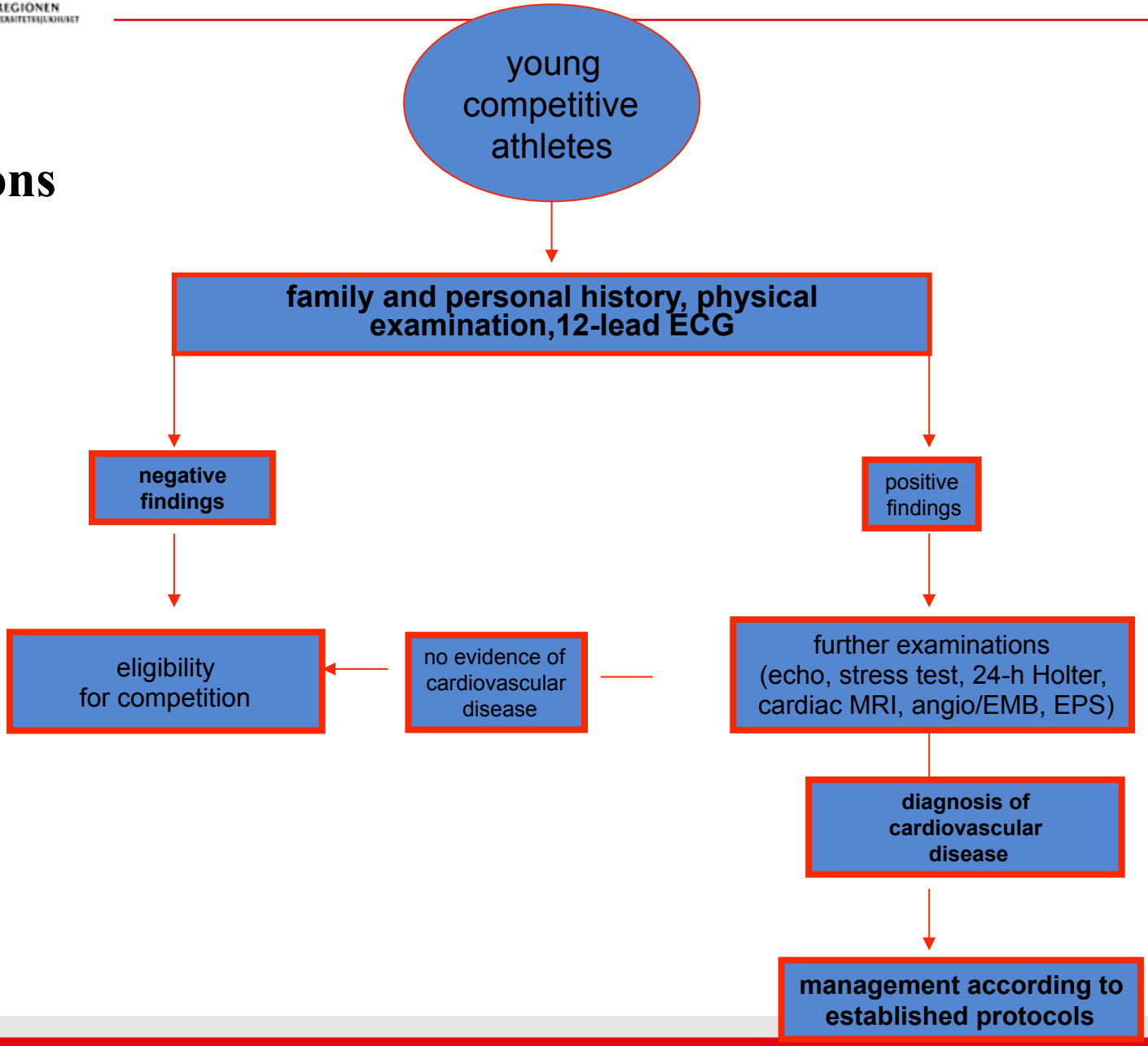
-aortic dissection

-valve disease (AS, MVP?)

Doping-?

CAA (left from right, Course between PA and aorta)

ESC screening recommendations



orrado et al,
ur Heart J 2005

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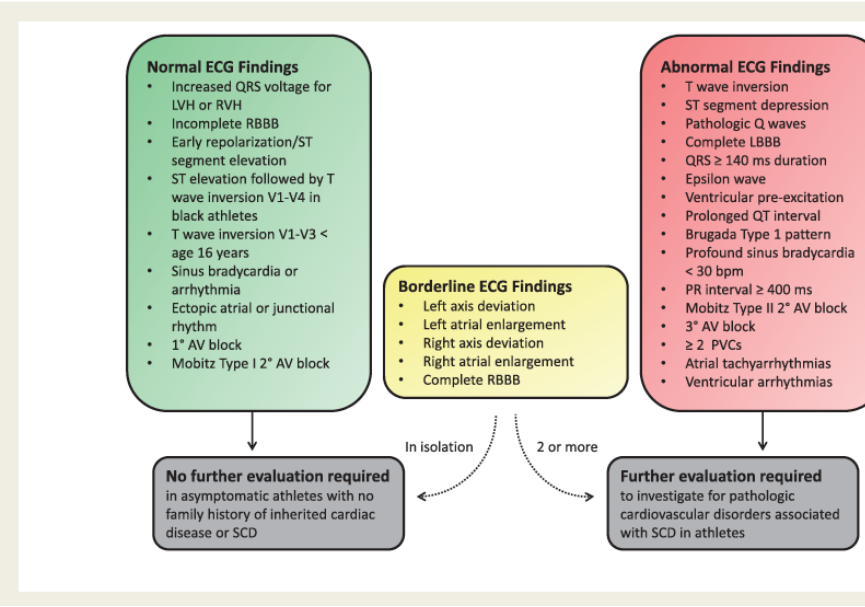
Sports Cardiology- ECG recommendations, April 2017

URNAL OF THE AMERICAN COLLEGE OF CARDIOLOGY VOL. 69, NO. 8, 2017

ISSN 0735-1097/$36.00
http://dx.doi.org/10.1016/j.jacc.2017.01.015

URRENT OPINION

nternational Recommendations for Electrocardiographic Interpretation n Athletes



anjay Sharma, MD,[a,*] Jonathan A. Drezner, MD,[b,*] Aaron Baggish, MD,[c] Michael Papadakis, MD,[a]
Mathew G. Wilson, PhD,[d] Jordan M. Prutkin, MD, MHS,[e] Andre La Gerche, MD, PhD,[f] Michael J. Ackerman, MD, PhD,[g]
Mats Borjesson, MD, PhD,[h] Jack C. Salerno, MD,[i] Irfan M. Asif, MD,[j] David S. Owens, MD, MS,[e]
Eugene H. Chung, MD, MS,[k] Michael S. Emery, MD,[l] Victor F. Froelicher, MD,[m] Hein Heidbuchel, MD, PhD,[n,o]
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Jonathan R. Riding, PhD,[d] Tess Saarel, MD,[v] Christian M. Schmied, MD,[w] David M. Shipon, MD,[x]
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HLR KONGRESS · STOCKHOLM 24-25 SEPTE

leta-analysis: sensitivity

EVIER
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Available online at www.sciencedirect.com
ScienceDirect
Journal of Electrocardiology 48 (2015) 329–338
JOURNAL OF
Electrocardiolog
www.jecgonline.c

e effectiveness of screening history, physical exam, and ECG to dete potentially lethal cardiac disorders in athletes: A systematic review/meta-analysis

imberly G. Harmon, M.D.,[a,b,*] Monica Zigman, M.P.H.,[a] Jonathan A. Drezner, M.D.[a]
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alysis of pooled data.

	ECG	History	Physical
ty	94% (79%–98%)	20% (7%–44%)	9% (3%-
ty	93% (90%–96%)	94% (89%–96%)	97% (95%
likelihood ratio*	14.8 (9.43–23.16)	3.22 (1.3–8.01)	2.93 (1.26
e likelihood ratio*	0.055 (0.012–0.25)	0.85 (0.68–1.07)	0.93 (0.85
tation of likelihood ratios			

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IEW!

Exercise related sudden cardiac death (SCD) in the young

– pre-mortal characterization of a Swedish nationwide cohort, showing a decline in SCD among athletes

Presented at ESC Congress, Paris, Sep 2, 2019

Accepted for publicati
Rescucitation, Sep 19,

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Mats Börjesson	Sahlgrenska Academy - University of Gothenburg, Goteborg, Sweden
Peter Krantz	Lund University, Lund, Sweden
Eva-Lena Stattin	Uppsala University, Uppsala, Sweden

HLR KONGRESS
STOCKHOLM 24–25 SEPT

Exercise related SCD in 10-35-year olds in Sweden

- 514 cases of SCD, 373 men (73%) and 141 (27%) women 2000-2010*
  - 62 cases of exertional SCD, 56 men (90%) and 6 women (10%)
    - 21/62 (33%) were athletes**
  - 30/62 (48%) had premortal risk factors
    - Cardiac symptoms/diagnoses (n= 25)
    - Family history (n=9)
    - ECG abnormalities*** (n=18)

Wisten et al. **Sudden cardiac death among the young in Sweden from 2000 to 2010: an autopsy-based study.** Europace. 2017 Aug 1;19(8):1327-1334. doi: 10.1093/europace/euw249.
defined as a person who participated in an organized team or individual sport that required regular practice and competitions.
Sharma et al. **International recommendations for electrocardiographic interpretation in athletes.** Eur Heart J. 2018 Apr 21;39(16):1466-1480. doi: 10.1093/eurheartj/ehw631

Athletes vs non-athletes

- SCD during exercise was more common in athletes (21/29) than in non-athletes (41/485) (P<0.0001)

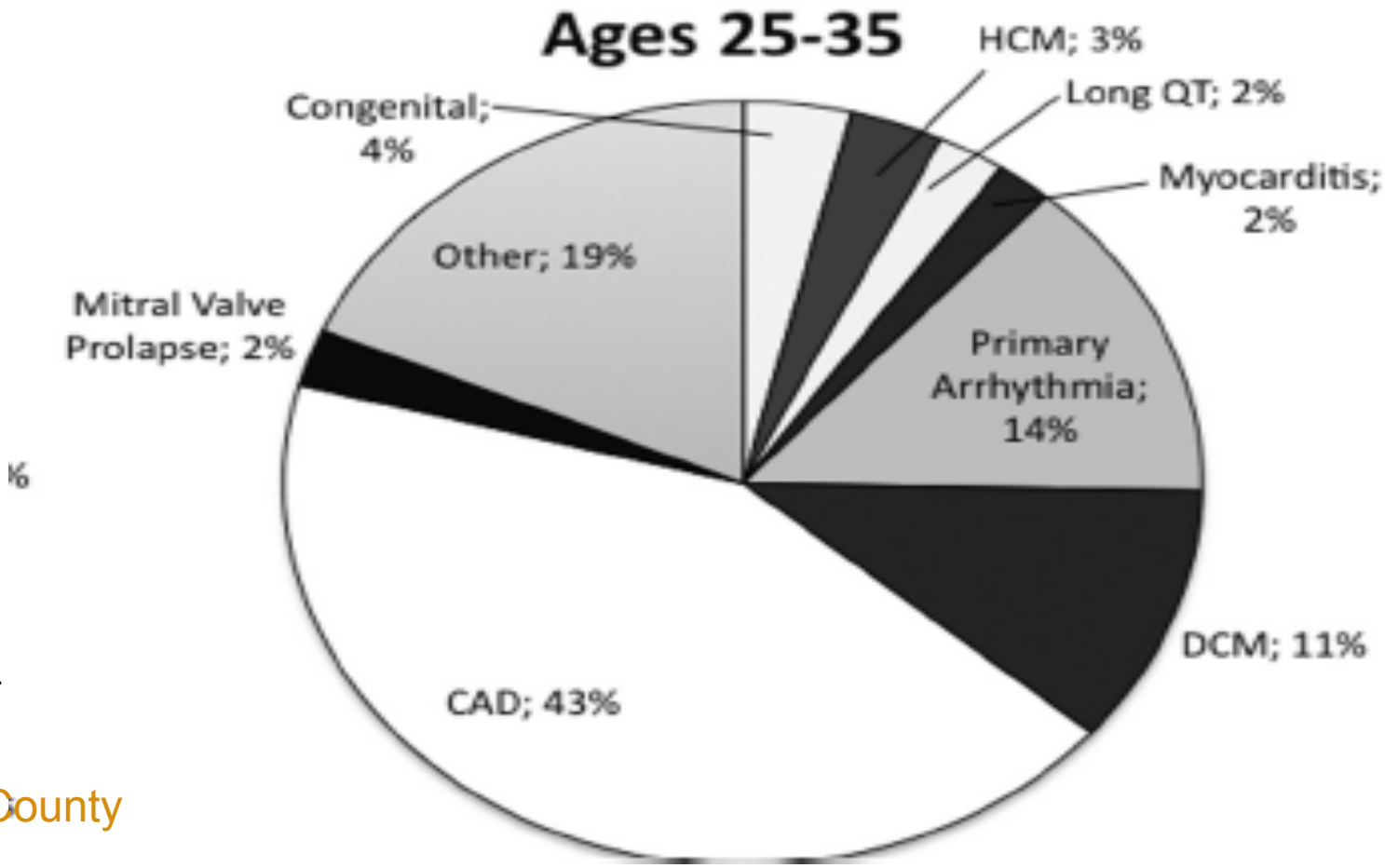
- Decline in SCD
  - 5 SCD/year in athletes 15-35 years old (1992-1999)*
  - 2.3 SCD/year in athletes 15-35 years old (2000-2010)

*Wisten et al. Sudden cardiac death in 15-35-year olds in Sweden during 1992-99. JIM. 2002;252(6):529-36

Study conclusion

- 12% of SCD in the young was exercise-related
- The risk of exercise-related SCD was higher for athletes
- Exercise seemed to trigger SCD in men with HCM and ARVC
- About 50% had a premortal risk profile
- *SCD incidence in athletes in the 2000´s has been halved compared to the 1990´s*

D most common cause of SCD from 25-35y



Master athletes↑

Myers L

Kings County

Incidence: 4.40/100 000
Person years

Subclinical disease among veterans…

(Sahlen, 2009)

- N=185 from 30 km cross-country race
- 71% male; mean age 62y; no known cardiac disease
- NT-pro BNP and hs-CRP measured
- Results: 15 NT-proBNP >194 ng/L

⇒ 4 of those severe CVD

1 Male 57; BNP 219: CRP 0.2: BP 176/108+ ascending aortic aneurysm

2 Male 74; BNP 2250; CRP 2.6: LVH, EF 30%, atrial fibrillation

3 Male 65; BNP 339; CRP 2.4: severe CAD leading to CABG

4 Male 69; BNP 363; CRP 2.0; SCD, severe CAD, silent MI, LVH

Screening of the older athlete

European Journal of Cardiovascular Prevention & Rehabilitation

Review

Cardiovascular evaluation of middle-aged/senior individuals engaged in leisure-time sport activities: position stand from the sections of exercise physiology and sports cardiology of the European Association of Cardiovascular Prevention and Rehabilitation

Mats Borjesson[1], Alex Urhausen[2], Evangelia Kouidi[3], Dorian Dugmore[4], Sanjay Sharma[5], Martin Halle[6], Hein Heidbüchel[7], Hans Halvor Björnstad[8], Stephan Gielen[9], Alessandro Mezzani[10], Domenico Corrado[11], Antonio Pelliccia[12] and Luc Vanhees[13]

European Journal of Cardiovascular Prevention & Rehabilitation
18(3) 446–458

DOI: 10.1177/HJR.0b013e32833bo
ejcpr.sagepub.com
SAGE

Screening recommendations accordi
1 Intensity-level of intended PA;
2. Risk profile;
3. Habitual exercise

Initial self-assessment

- Initially, by a self-evaluation
  - -AHA/ACSM questionnaire
  - -revised PAR-Q
- Secondarily, a risk stratification by a physician (if necessary)
  - -by SCORE

Table 2. Revised Physical Activity Readiness Questionnaire

1	Has a doctor ever said that you have a heart condition and recommended only medically supervised activity?	Yes/N
2	Do you have chest pain brought on by physical activity?	Yes/N
3	Have you developed chest pain in the past month?	Yes/N
4	Have you on 1 or more occasions lost consciousness or fallen over as a result of dizziness?	Yes/N
5	Do you have a bone or joint problem that could be aggravated by the proposed physical activity?	Yes/N
6	Has a doctor ever recommended medication for your blood pressure or a heart condition?	Yes/N
7	Are you aware, through your own experience or a doctor's advice, of any other physical reason that would prohibit you from exercising without medical supervision?	Yes/N

Adopted from Balady. *Circulation* 1998; 97:2283-2293.

Risk factor profile

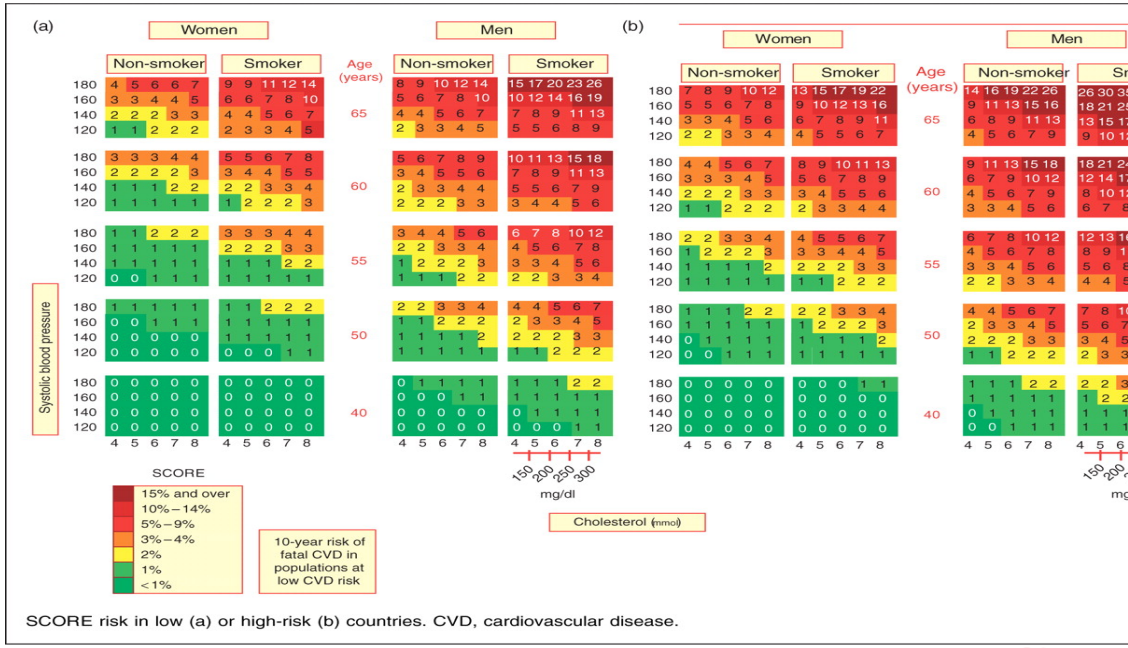
In asymptomatic subjects, the total CAD-risk level can be estimated from the presence of major risk factors, according to the SCORE (systematic coronary risk evaluation)-system

- **-blood pressure**
- **-age**
- **-sex**
- **-smoking**
- **-total cholesterol (ESC prevention)**

In addition, diabetes and

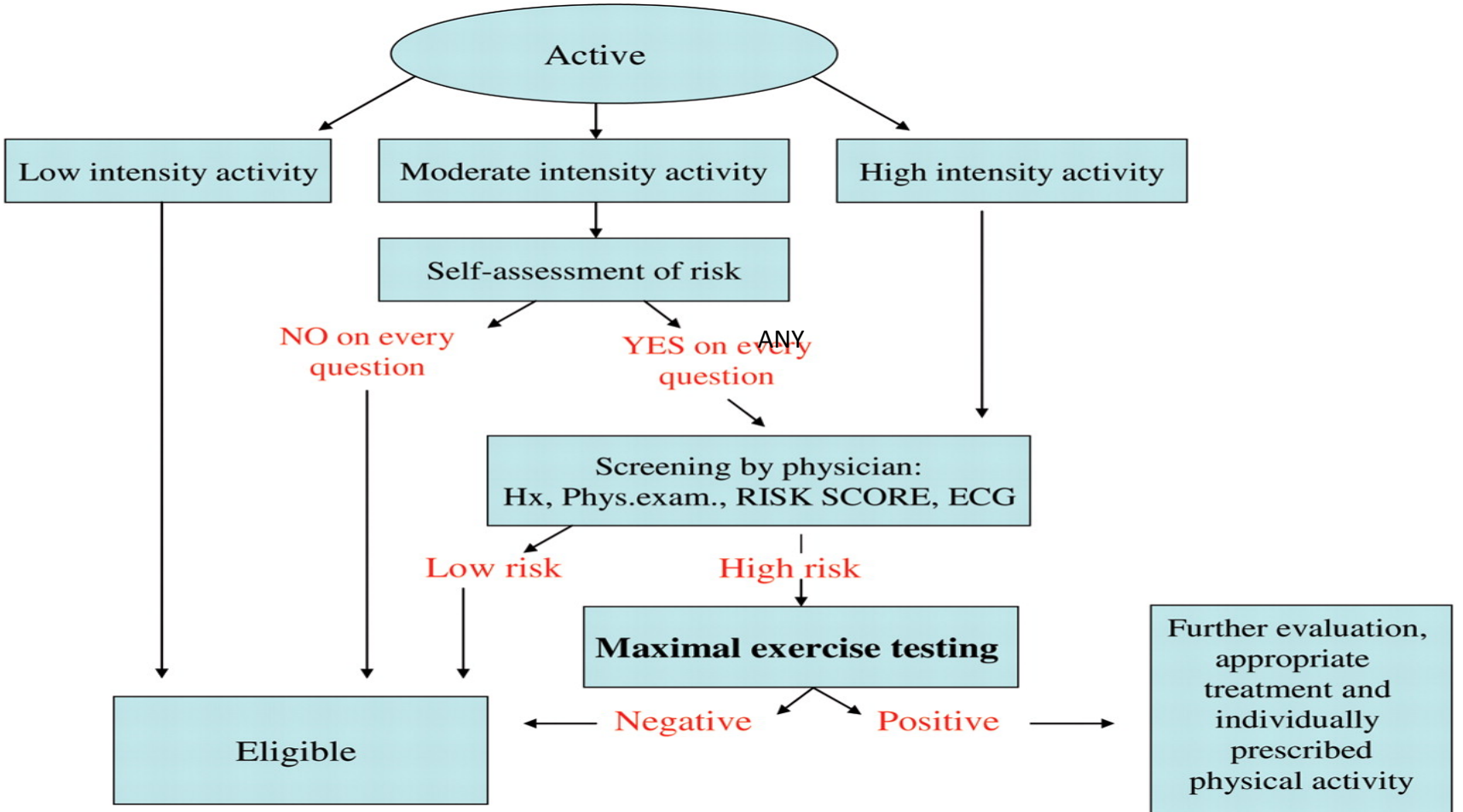
amily history can be added

ps! Framingham risk score (FRS) similar



SCORE risk in low (a) or high-risk (b) countries. CVD, cardiovascular disease.

Specific pre-participation screening work-up for regularly active middle-aged/senior individuals.



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Pre-Race SAFER Intervention Study

Pre intervention (2008-2011) - Post intervention (2012 – 2015)

Does a pre-race screening and educational intervention reduce medical complications during a race?

Ori

Prerace medical screening and education redu
medical encounters in distance road races: SA
study in 153 208 race starters

Martin Schwellnus,[1,2,3] Sonja Swanevelder,[4] Wayne Derman,[2,5] Mats Borj
Karen Schwabe,[9] Esme Jordaan[4,10]

► Additional material is published online only. To view please visit the journal online (http://dx.doi.org/10.1136/bjsports-2018-099275).

For numbered affiliations see end of article.

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mschwell@iafrica.com

Accepted 26 October 2018

ABSTRACT

Objectives To examine the efficacy and feasibility of an online prerace medical screening and educational intervention programme for reducing medical complications in long-distance races.

Methods This was an 8-year observational study of medical encounter rates among 153 208 Two Oceans race starters (21.1 and 56 km) in South Africa. After the first 4-year control (CON) period, we introduced an online prerace medical screening (based on European pre-exercise screening guidelines) and an automated educational intervention programme. We compared the incidence of medical encounters (per 1000 starters; all and serious life threatening) in the CON versus the 4-year intervention (INT) period.

Results In comparison to the CON period (2008–2011: 65 865 starters), the INT period (2012–2015: 87 343 starters) had a significantly lower incidence (adjusted for age group, sex, race distance) of all medical encounters by 29% (CON=8.6 (7.9–9.4); INT=6.1 (5.6–6.7), p<0.0001), in the 21.1 km race by 19% (CON=5.1 (4.4–5.9); INT=4.1 (3.6–4.8), p=0.0356) and in the 56 km race by 39% (CON=14.6 (13.1–16.3); INT=9.0 (7.9–10.1), p<0.0001). Serious life-threatening encounters were significantly reduced by 64% (CON=0.6 (0.5–0.9); INT=0.2 (0.1–0.4); p=0.0003) (adjusted for age group and sex). Registration numbers increased in the INT period (CON=81 345; INT=106 743) and overall % race starters were similar in the CON versus INT period. Wet-bulb globe temperature was similar in the CON and INT periods.

Conclusion All medical encounters and serious life-threatening encounters were significantly lower after the introduction of a prescreening and educational intervention programme, and the programme was feasible.

What are the findings?

- An online prerace medical scree
- educational intervention progra
- significantly reduce medical en
- alter race starter risk profile.
- It is feasible to implement an o
- medical screening and educatio
- programme at a mass commun
- running event.
- The results of this study have th
- change current practice of prov
- care at mass community-based
- sports events worldwide.
- Race organisers and race medic
- consider implementing such pro
- improve race safety.

How might it impact on clinical future?

- Race medical directors and race
- may consider implementing an
- medical screening and educatio
- programme at mass community
- endurance events.
- Race medical directors and race
- document the impact of implem
- programmes.
- Implementation of prerace med
- and education could lead to im
- safety.
- The results of this study have th
- change policy.

INTRODUCTION

Regular physical activity (PA) is an important lifestyle intervention for primary and secondary prevention of non-communicable disease.[1–5] The recommended minimum weekly healthy 'dose' of exercise is 150 min at moderate to vigorous intensity.[5–7] Mass community-based sports events such as distance running events have, over the last two to three decades, seen substantial growth in participant numbers,[8] with a notable increase in older participants (http://www.runningusa.org/annual-reports). While regular PA has numerous health benefits, PA is associated with medical encounters,[9 10] including acute myocardial infarction and sudden death.[11–16]

The reported absolute risk of sud
marathons, and similar races, vari
and 0.033 per 1000 race entran
dence of other non-cardiac, but s
ening medical encounters during
well studied,[22–28] but is about 0.
entrants (0.17–1.55 per 1000 race

To reduce the risk of acute medi
during sport, precompetition m
has been proposed, with the main
elite athletes.[14 29–33] However, the
population has a higher incidence
complications during exercise[34]
international organisations deve

Check for updates

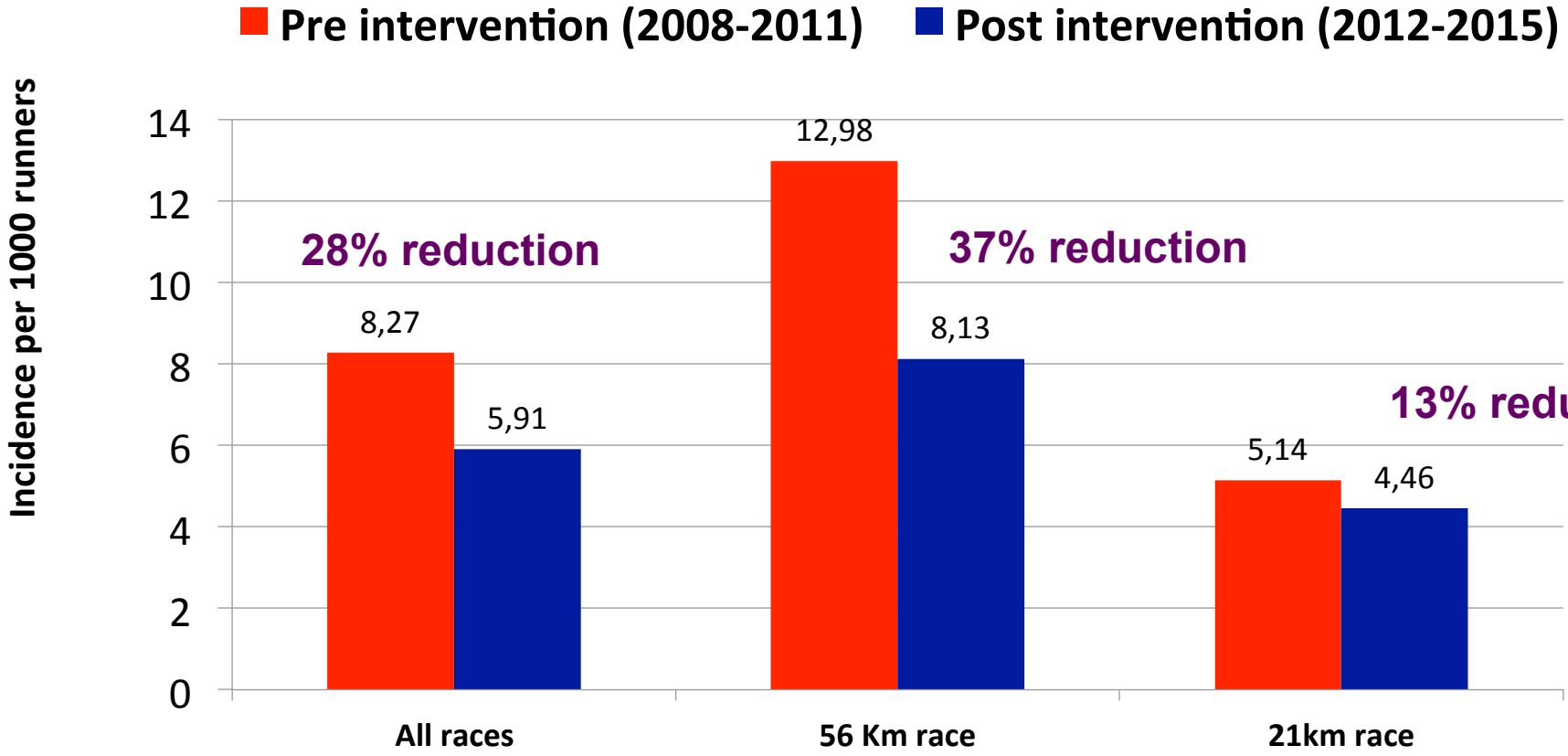
To cite: Schwellnus M, Swanevelder S, Derman W, *et al*. *Br J Sports Med* Epub ahead of print: [*please include* Day Month Year]. doi:10.1136/bjsports-2018-099275

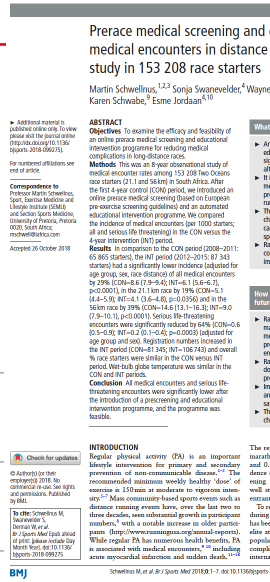
Design and implementation

Three-step SAFER screening and educational intervention program:

1. Compulsory completion of a pre-participation medical questionnaire at race entry (4-6 months before an event)
2. Risk stratification:
   - Very high risk – Existing CVD, symptoms of CVD
   - High risk – Risk factors for CVD
   - Intermediate risk – Other chronic disease, medication use, history of medical complications during exercise
   - Low risk – "No" answer to all medical screening questions
3. Educational intervention:
   - Personalized educational information
   - General medical educational

Pre- vs. Post Screening (2008-2015)(Incidence of all medical complications)




Prerace medical screening and
medical encounters in distance
study in 153 208 race starters

Martin Schwellnus,[1,2,3] Sonja Swanevelder,[4] Wayne
Karen Schwabe,[9] Esme Jordaan[4,10]

ABSTRACT

INTRODUCTION

BMJ

Schwellnus M, Schwabe K, Swanevelder S, Jordaan E, Derman W, et al, BJSM, April 2019

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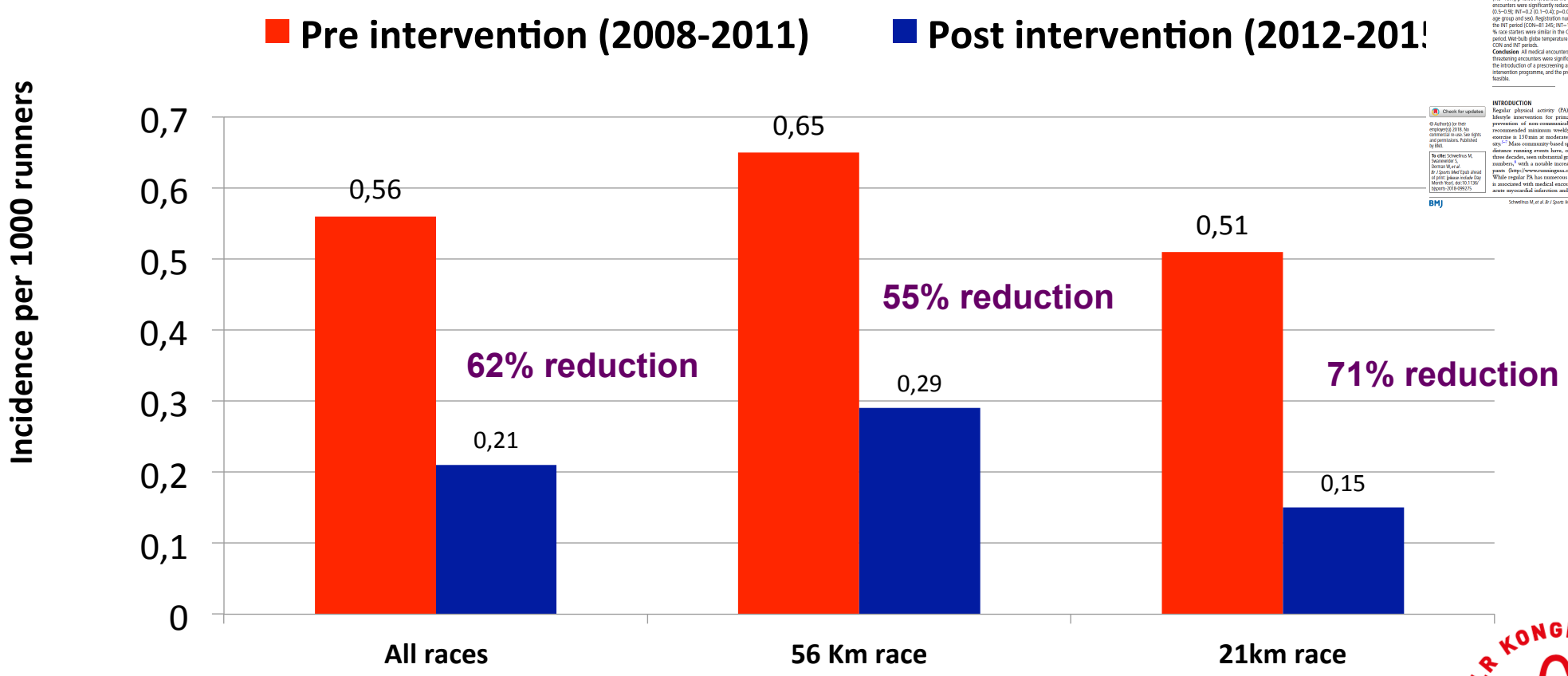
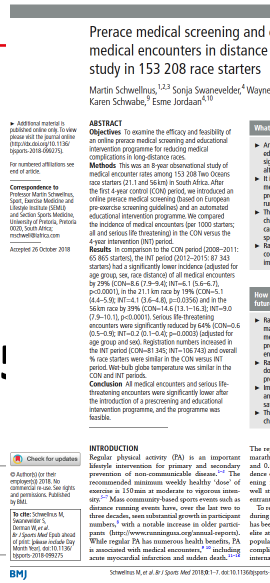
Pre- vs. Post Screening (2008-2015)
(Incidence of serious life threatening medical complications)

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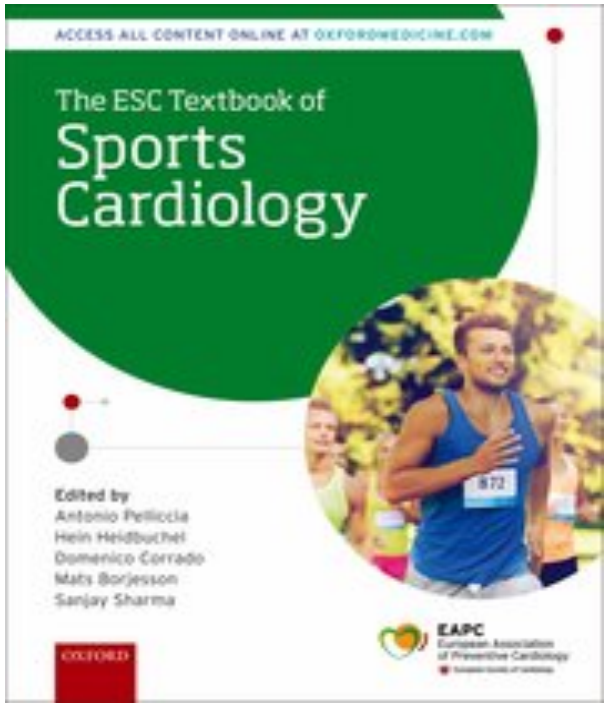
To read more…



2019