

Cardiac rehabilitation (CR) structure and process quality

心脏康复体系和过程的质量控制

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Preamble

前言

... Cardiovascular disease is eminently preventable, as outlined in the recent **European Heart Health Charter**: 'the burden of established cardiovascular disease may also be reduced by early diagnosis, appropriate disease management, rehabilitation, and prevention, including structured lifestyle counselling.' ...

(European Heart Health Charter, article 7)

... 心血管疾病可以被非常有效地预防，正如近期的《欧洲心脏健康宪章》所述的：“通过早期诊断、恰当的疾病管理、康复和预防，包括结构化的生活方式指导，也可能减少已确诊心血管疾病带来的负担。”...

(《欧洲心脏健康宪章》，第七条)

<http://www.heartcharter.eu/>



Preamble

前言



European
Cardiovascular
Disease
Statistics
2017 edition



<http://www.ehnheart.org/>

cvd-statistics/cvd-statistics-2017.html.

... each year, CVD **kills over 3.9 million people** in Europe and **more than 1.8 million** in the European Union (**EU**). It is responsible for **55% of all deaths in women** across Europe and **43% of the deaths in men**, killing more people than all cancers combined. The **cost of CVD** on the EU economy is estimated to be approximately **210 billion Euros per year** (from 169 billion Euros in 2012)...

...在欧洲，**每年有超过390万人死于心血管疾病**，**其中超过180万人来自欧盟**。欧洲死于心血管疾病的女性人数占全部女性死亡人数的**55%**，而男性死亡人数则占全部男性死亡人数的**43%**，比所有癌症死亡人数加起来还要多。据估计，欧盟每年在心血管疾病方面的花费约为**2100亿欧元/年**(2012年为1690亿欧元)...



fighting heart disease
and stroke

与心脏病和脑卒中斗争

1992 12 MEMBERS
9 COUNTRIES

→ 2017 30 MEMBERS
25 COUNTRIES

PUTTING HEART HEALTH ON THE EUROPEAN POLICY AGENDA

将心脏健康纳入欧洲政策 议程

Advocating for cardiovascular health with European policymakers has been at the heart of our work for 25 years and we have achieved so much together. How many more hearts can we save?



2004

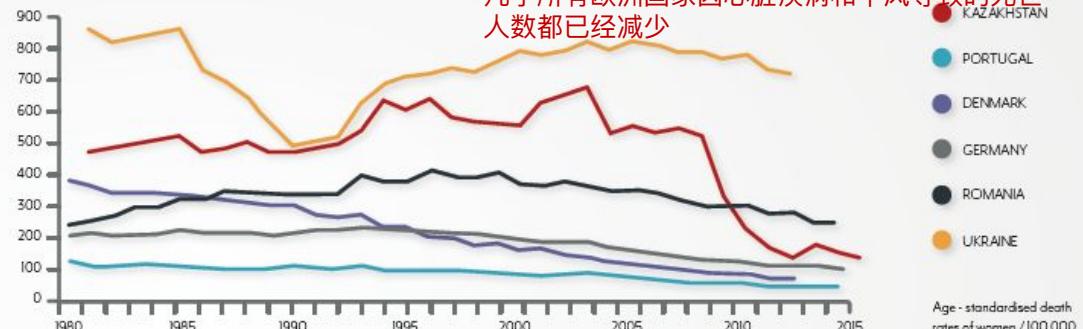
- Council conclusions on promoting heart health with EHN in the planning committee

2007

- European Heart Health Charter launched in the European Parliament with Health Commissioner Kyprianou
- European Parliament Resolution on action to tackle cardiovascular disease (July)

NUMBER OF DEATHS FROM HEART DISEASE AND STROKE HAS DECREASED IN NEARLY ALL EUROPEAN COUNTRIES

几乎所有欧洲国家因心脏疾病和中风导致的死亡
人数都已经减少



PUBLISHED
47 REPORTS 已发表47份
报告



11 on food and nutrition

4 on tobacco

3 on physical activity

5 on cardiovascular disease statistics

2 on stress and psychosocial factors

6 on patient support and health outcomes

PROMOTING POLICIES THAT SAVE LIVES

推广可以拯救生命的政策



ORGANISED 25 WORKSHOPS

已组织25场研讨会

- Global prevention goals
- Women and cardiovascular disease
- Children and obesity
- Risk factors: diet, tobacco, physical activity, stress, psycho-social factors
- Mass media campaigns on heart attacks and stroke

STRONG EUROPEAN TOBACCO CONTROL MEASURES

- 2001-2014 | Tobacco Products Directive EHN paper 1998
- 2003 | Tobacco Advertising Ban EHN paper 1998
- 2010 | Tobacco Excise Duties Joint paper by public health organisations, including EHN 2006

MANDATORY NUTRITION LABELLING

- 2001 | Food Information to Consumers EHN papers 2003, 2007 and 2008

MORE FRUIT AND VEGETABLES IN SCHOOLS

- 2009 | School Fruit Scheme EHN paper 2005

CHILD EXPOSURE TO UNHEALTHY FOODS HIGH ON THE EUROPEAN AGENDA

- 2007 | Audio Visual Media Services EHN paper 2005

NO HEART - HEALTH CLAIMS WITHOUT EVIDENCE

- 2006 | Nutrition and Health Claims EHN paper 2001



fighting heart disease
and stroke
european heart network

Preamble – the target

前言- 目标



Atherosclerosis (better: Atherolipomatosis)

动脉粥样硬化（更好的解释：脂质过多导致的动脉粥样病变）

is a **lifelong process** in patients who have cardiovascular risk factors and are not genetically protected against it

此疾病是一个终生的疾病，患有此疾病患者具有心血管疾病风险因素并且因为基因遗传先天性地对此疾病没有抵抗力。



Saner 2010

Preamble – the target

前言-目标

Raitikari et al 2003

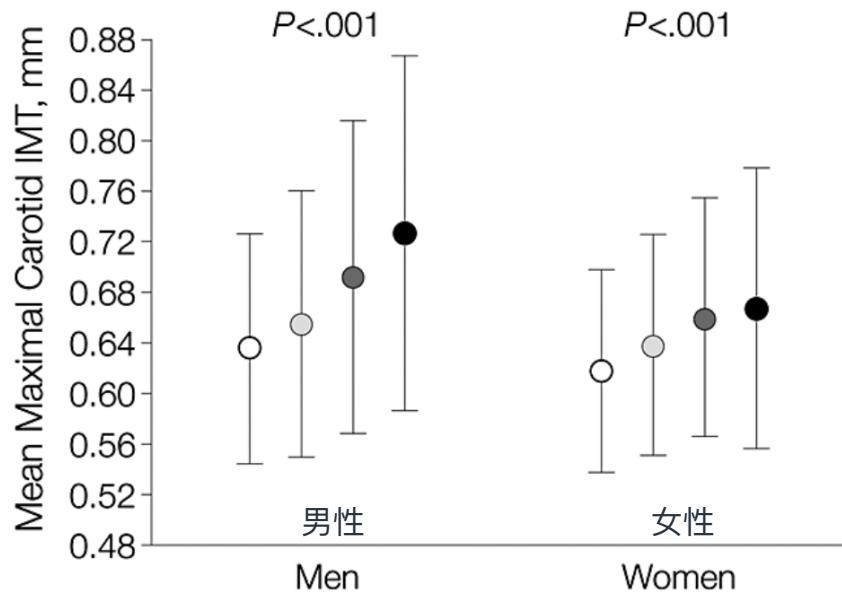
SIEG REHA SIEG PHYSIO-SPORT

CV risk factors and carotid artery IMT (measured 21 years later) in child- and adulthood – The Young Finns Study

儿童和成人身上的心血管风险因素和颈动脉内中膜厚度 (IMT) (21年
后测量) - 芬兰青少年心血管风险研究

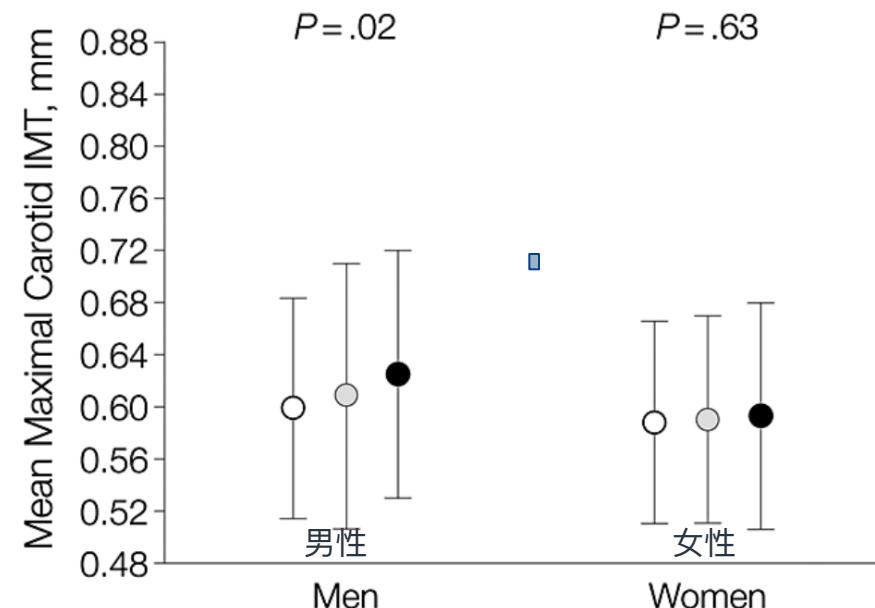
A Risk Factors Measured at Ages 12-18 y

12-18岁时测量的风险因素



B Risk Factors Measured at Ages 3-9 y

3-9岁时测量的风险因素



Goals of CR and (secondary) cardiovascular prevention

心脏康复和（二级）心血管疾病预防的目标

- Preventing disability from CVD especially in elderly persons and those with physical exertion involved in occupation
 - 预防由心血管疾病导致的残疾，尤其是在老年人和工作涉及到强体力活动的患者。
- Preventing subsequent cardiovascular events, subsequent hospitalization and death from CVD
 - 预防随后的心血管事件和住院以及由心血管疾病导致的死亡。

Patients referred to CR require:

转诊至心脏康复的患者需要：

-counselling to prevent event recurrence

接受辅导咨询以预防疾病复发。

-by adhesion to a medication plan and

坚持遵医嘱用药

-adoption of a healthy lifestyle

采取健康的生活方式

CR is a multifaceted and multidisciplinary intervention

心脏康复是一个多层面、跨学科的医疗干预

-improving functional capacity, recovery

and psychological well-being

改善功能性能力、康复和心理健康水平



Classes of recommendations

推荐分类

Table I Classes of recommendations

推荐分类

Class I I类	Evidence and/or general agreement that a given treatment or procedure is beneficial, useful, effective. 证据和/或共识显示一种既定的治疗或措施有益、有用、有效。	Is recommended/is indicated 推荐/证明
Class II II类	Conflicting evidence and/or a divergence of opinion about the usefulness/efficacy of the given treatment or procedure. 关于一种既定治疗或措施有用性/效力的冲突证据和/或意见分歧	
Class IIa IIa类	Weight of evidence/opinion is in favour of usefulness/efficacy. 证据权重支持有用性/有效性的	Should be considered 应该考虑
Class IIb IIb类	Usefulness/efficacy is less well established by evidence/opinion. 证据/意见并不能很好地证明有用性/有效性	May be considered 可能被考虑
Class III III类	Evidence or general agreement that the given treatment or procedure is not useful/effective, and in some cases may be harmful. 证据或共识表明一种既定治疗或措施没有用/没有效,某些情况下甚至有害	Is not recommended 不推荐

Preamble

前言



EUROPEAN
SOCIETY OF
CARDIOLOGY



American
Heart
Association®
Learn and Live

CR 心脏康复

• **class I recommendation** by the European Society of Cardiology (**ESC**), the American Heart Association (**AHA**) and the American College of Cardiology (**ACC**) in the treatment of patients with coronary artery disease (CAD)

是欧洲心脏病协会 (**ESC**)、美国心脏协会 (**AHA**) 和美国心脏病学会 (**ACC**) 对于冠心病 (CAD) 患者**I类推荐**的治疗

• cost-effective intervention after acute coronary event (**ACS**) and in patients with chronic heart failure (**CHF**)

是急性冠状动脉综合征 (**ACS**) 和慢性心力衰竭 (**CHF**) 后**符合成本经济效益的医疗干预**

• **improves prognosis** by reducing recurrent hospitalization

• 通过减少重复住院，改善预后

• improves health care expenditures

• 减少医疗护理花费

• **prolongs patients' lifespan**

• 延长患者寿命

Piepoli et al 2010

Indications for CR

心脏康复适应症

Coronary Artery Disease (CAD)

冠心病

after myocardial infarction
(ACS, NSTEMI, STEMI)

心肌梗塞 (急性冠状动脉综合症、非
ST段抬高型心肌梗塞、ST段抬高型心
肌梗塞)

after revascularization (PCI,
CABG)

血管再形成 (经皮冠状动脉介入治疗、
冠状动脉旁路移植术)

stable angina
稳定型心绞痛

other cardiac conditions

其它心脏疾病

Valvular heart disease
(prothesis, reconstruction, TAVI,
Mitra-Clip™, ...)

心脏瓣膜病 (修复术、重建、经导管主动
脉瓣植入术、Mitra-Clip手术)

after ICD- /CRT-Implantation除颤器/
起搏器-植入后
Myocarditis 心肌炎

Congenital heart disease 先天性心脏病

Hypertension (severe)
高血压 (严重的)

Cardiac transplant (HTX, HLTX, VAD)
心脏移植 (HTX, HLTX, VAD)

Chronic heart failure (CHF)
慢性心脏衰竭

Peripheral artery disease (PAD)
外周动脉疾病

“healthy” subjects

“健康”主题

high-risk subjects
(metabolic syndrome,
DM2,...)

高风险患者 (代谢综合症、
II型糖尿病...)



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CARDIOLOGY

Contra-Indications for CR

心脏康复禁忌症

Cardiac

心脏

Unstable angina

不稳定型心绞痛

Advanced heart failure (NYHA IV)

晚期心力衰竭(NYHA IV)

(Uncontrolled) High blood pressure

(不可控的) 高血压

Left ventricular outflow tract obstruction

左室流出道梗阻

Grade 2 and 3 AV block

2级和3级房室传导阻滞

Acute Myocarditis

急性心肌炎

Active Pericarditis

活跃的心包炎

Severe valvular disease

严重瓣膜疾病

Severe ventricular arrhythmias

严重室性心律失常

Others

其他

Aortic dissection

主动脉夹层

Acute thrombophlebitis

急性血栓性静脉炎

Pulmonary or systemic embolism

肺或系统性栓塞

Severe psychological disorders

严重心理障碍

Severe mobility limitations

严重的活动受限



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CARDIOLOGY

CR programmes are based on long-established models involving **residential or ambulatory** programmes according to local and national (*and – not to forget – personal*) preferences
心脏康复方案需要根据长期建立的模式，包括根据当地和国家（当然也不能忘记个人）偏好设定为住院型或门诊型的心脏康复方案。

Recommendations by the Working Group on Cardiac Rehabilitation of the ESC:

Long term comprehensive care of cardiac patients (1992)
来自欧洲心脏病学会心脏康复工作组的建议：心脏病患者的长期综合护理 (1992)



接受以运动为基础的心脏康复的患者的死亡率减少：对心血管风险因素的改善有多少贡献？

Mortality reductions in patients receiving exercise-based cardiac rehabilitation: how much can be attributed to cardiovascular risk factor improvements?

Rod S. Taylor^a, Belgin Unal^b, Julia A. Critchley^c and Simon Capewell^b

^aDepartment of Public Health & Epidemiology, University of Birmingham, ^bDepartment of Public Health, University of Liverpool and ^cInternational Health Research Group, Liverpool School of Tropical Medicine, Liverpool, UK.

Received 16 March 2005 Accepted 25 November 2005

What is known: the mortality risk in CAD patients is reduced:

已知：冠状动脉疾病患者的死亡风险已减少：

- by > 36% or more my cessation of smoking or decrease of total cholesterol

通过停止吸烟或减少总胆固醇，死亡风险减少超过36%

- by > 20% from a decrease in blood pressure.

通过降低血压，死亡风险减少超过20%

Taylor et al 2006

CR programs

心脏康复方案

接受以运动为基础的心脏康复的患者的死亡率减少：对心血管风险因素的改善有多少贡献？

Mortality reductions in patients receiving exercise-based cardiac rehabilitation: how much can be attributed to cardiovascular risk factor improvements?

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??? does **exercise training** principally decrease cardiac mortality in CHD patients by **direct effects** on the heart and coronary vasculature or **indirectly via primary risk factors** ???

运动训练主要是通过哪种方式降低冠心病患者的死亡率的？是直接影响心脏和冠脉血管还是通过主要风险因素间接影响？

Taylor et al 2006

Cardiac mortality in CR trials of exercise alone

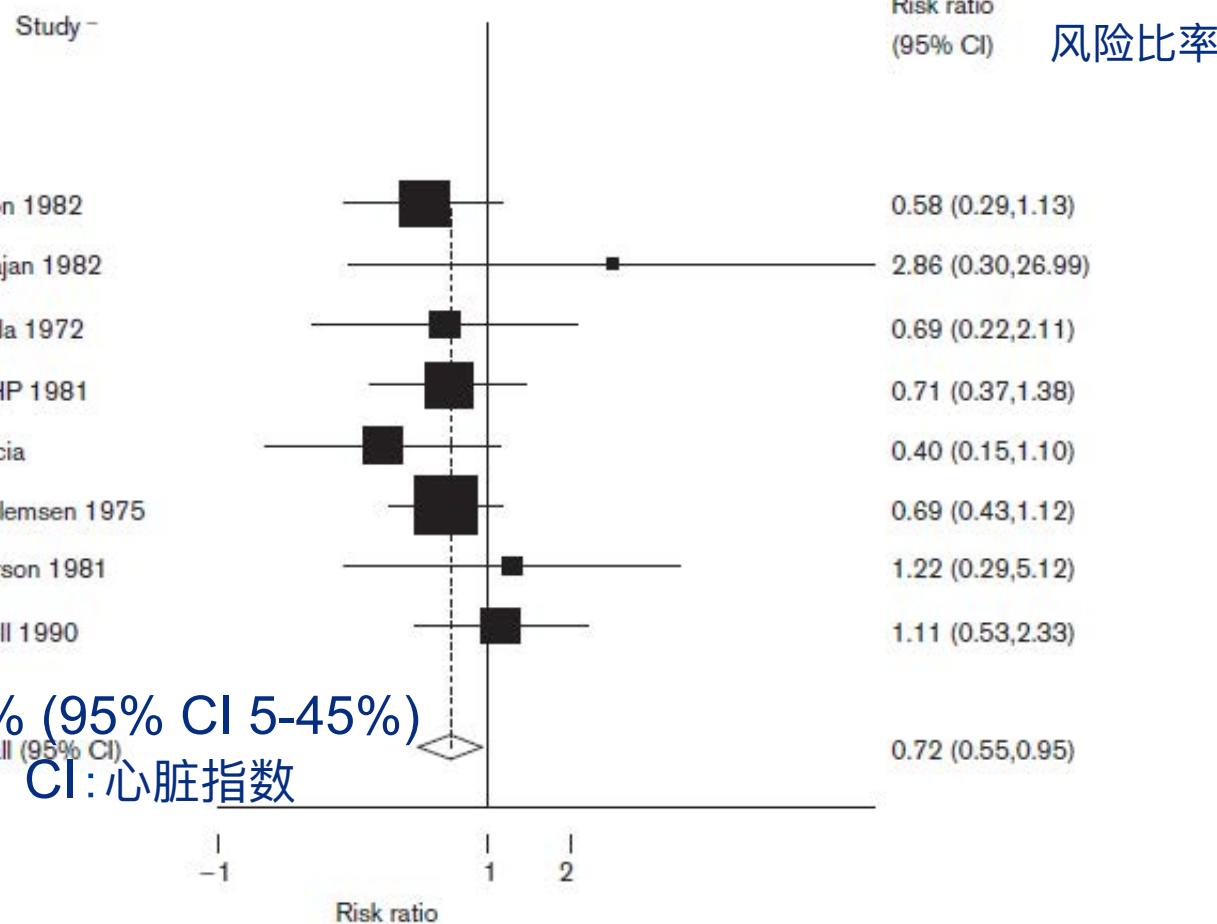
单纯运动心脏康复试验中的心源性死亡

n = 19 trials,
数量=19次试验

2984 patients,
„exercise
only“ RCTs,
2984名患者,
“单纯运动”随机对
照试验

2 years
follow-up
2年随访

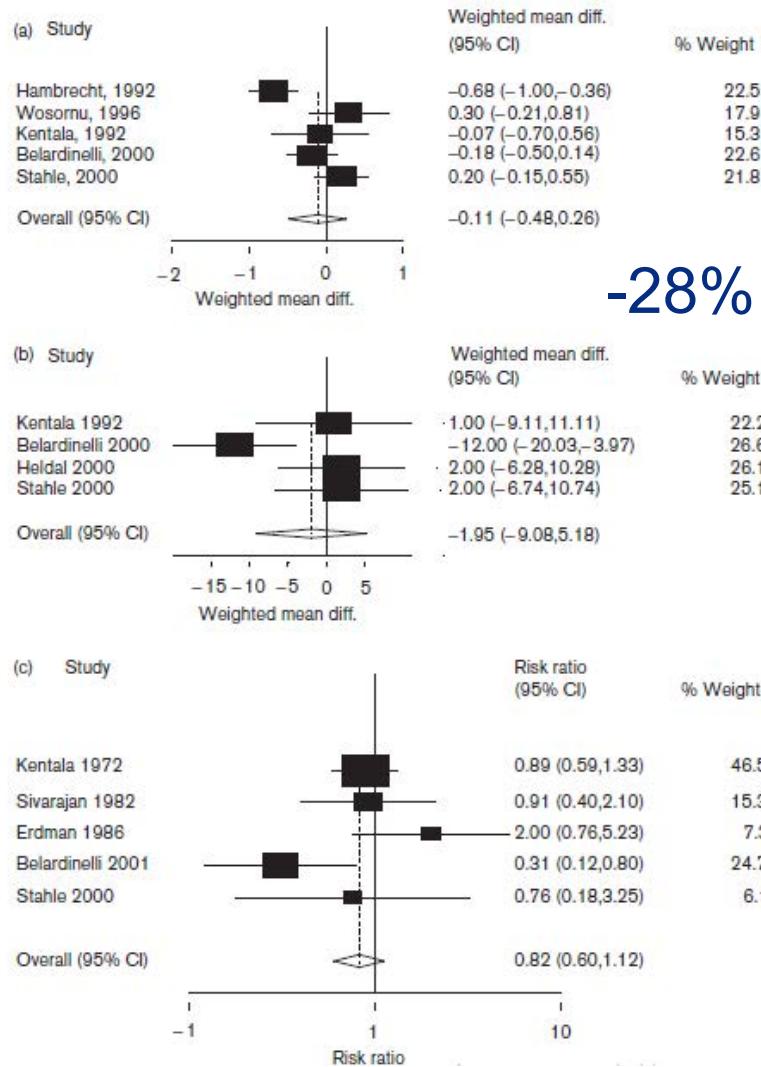
Taylor et al 2006



Cardiac mortality in cardiac rehabilitation trials of exercise intervention alone (versus usual care). Heterogeneity $\chi^2 = 5.04$ (df 7); $P = 0.655$ (fixed effects model). CI, confidence interval.

Cardiac mortality in CR trials of exercise alone

单纯运动心脏康复试验中的心源性死亡



using the IMPACT model:
使用IMPACT模型：

risk factor changes in cardiac
rehabilitation trials of exercise
intervention alone (versus usual
care)

单纯运动干预的心脏康复试验中的风险因
素发生改变（与常规护理相比）

- (a) total cholesterol levels
总胆固醇水平
- (b) systolic blood pressure
收缩压
- (c) relative risk of smoking
抽烟的相对风险

Taylor et al 2006

Cardiac mortality in CR trials of exercise alone

SIEG REHA SIEG PHYSIO-SPORT

单纯运动心脏康复试验中的心源性死亡

表2以运动为基础的心脏康复试验：因风险因素改变导致的死亡数目被防止或延迟

Table 2 Exercise-based cardiac rehabilitation trials: number of deaths prevented or postponed attributable to risk factor changes

Intervention	Patients eligible	Relative risk	Change in risk factor (%)	Deaths prevented or postponed		Proportion of 30 overall deaths prevented or postponed in the intervention group	
				Best	(Min/Max)	Best	(Min/Max)
Smoking	2984	0.36 (0.29–0.41)	-0.180	-7.1	(-6.2/-9.5)	-23.8%	(-20.7%/-31.7%)
Cholesterol	2984	3.5 (3.1–3.9)	-0.018	-5.9	(0.6/-12.6)	-19.7%	(2.0%/-41.8%)
Population BP	2984	1.59 (1.29–1.86)	-0.024	-4.4	(1.0/-6.7)	-14.7%	(3.5%/-22.2%)
Total risk factor effects				-17.46	(-4.6/-28.8)	-58.2%	(15.5%/-95.8%)

BP, blood pressure.

exercise -41.8%

运动-41.8%

approximately half of the 28% (total) reduction in cardiac mortality achieved with exercise-based cardiac rehabilitation may be attributed to **reductions in major risk factors, particularly smoking ... the remainder may therefore be attributable to the beneficial effects of exercise acting through non-risk factor mechanisms**

以运动为基础的心脏康复实现的心源性死亡28%的减少，其中将近一半可能归功于主要风险因素的减少，尤其是吸烟...其余部分可能要归功于运动在非风险因素机制下的有利影响。



Taylor et al 2006

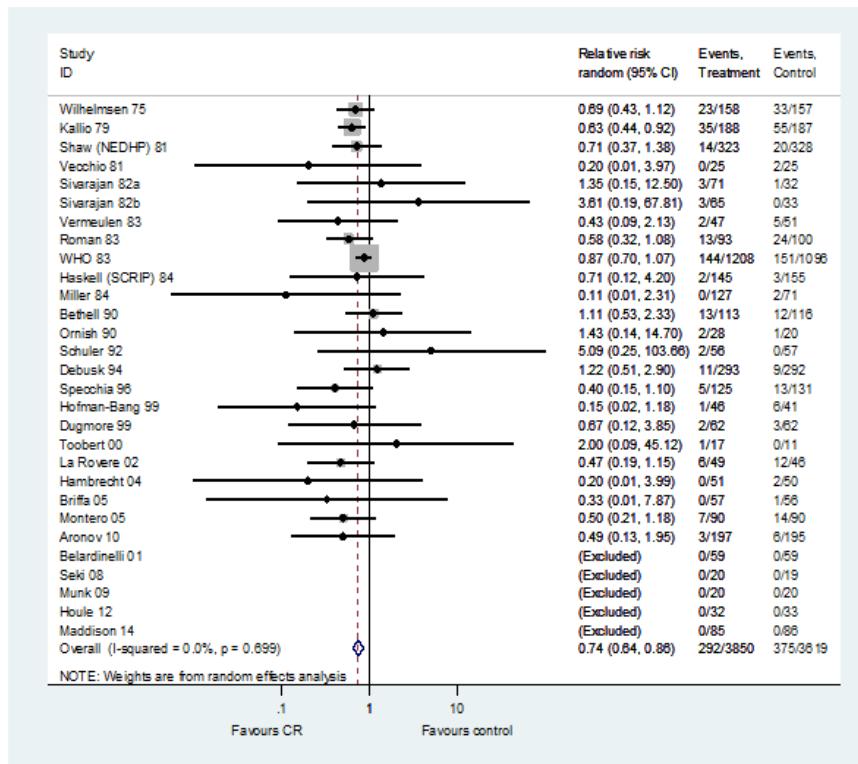


- 63 studies with 14,486 participants
median follow-up of 12 months were included
包括了63项研究、14486个参与者和12个月的中位随访
- **26% reduction in cardiovascular mortality** (relative risk: 0.74; 95% confidence interval: 0.64 - 0.86)
心血管疾病死亡率26%的减少（相对风险：0.74；95% 置信区间：0.64 - 0.86）
- **18% reduction of hospital admissions** (relative risk: 0.82; 95% confidence interval: 0.70 - 0.96)
医院入院率减少18%（相对风险：0.82；95%置信区间：0.70 - 0.96）
- **no significant effect on total mortality, myocardial infarction, or revascularization**
对全因死亡率、心肌梗死或血管重建无明显影响
- **higher levels of health-related QoL** in most studies (14 of 20) in ≥ 1 domain following exercise-based CR compared with control subjects
以运动为基础的心脏康复后，与对照组相比，大多数（20个中的14个）研究中在1个以上领域里的健康相关生活质量更高。
- consistent across patients and intervention types
患者和干预类型一致
- independent of study quality, setting, and publication date
不受研究质量、设定和发布日期影响

Anderson et al., JACC 2016

CR - Cochrane review and meta-analysis 2016

心脏康复-《Cochrane系统评价》和荟萃分析 2016

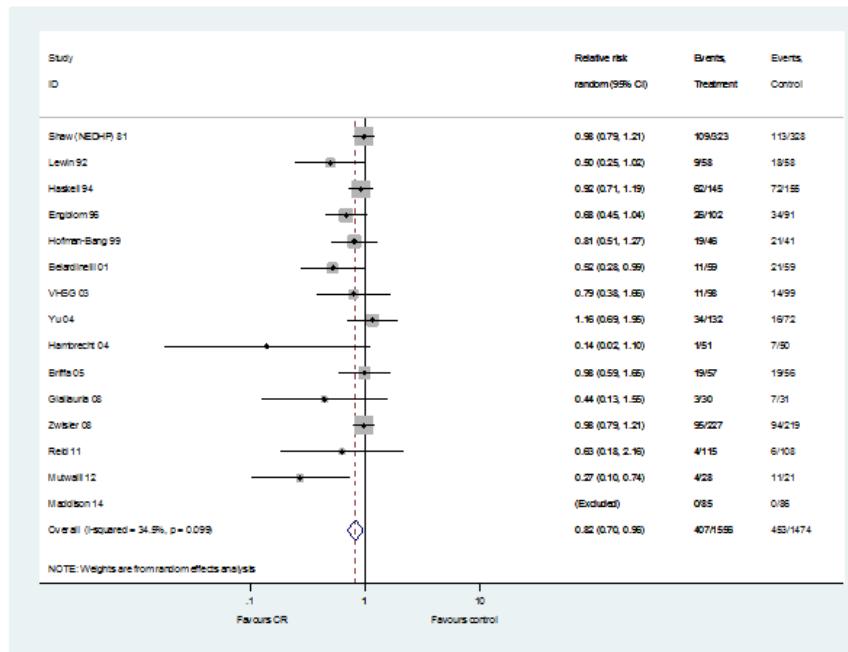


CV mortality
26% reduction
心血管疾病死亡率
減少26%

Anderson et al., JACC 2016

CR - Cochrane review and meta-analysis 2016

心脏康复-《Cochrane系统评价》和荟萃分析 2016

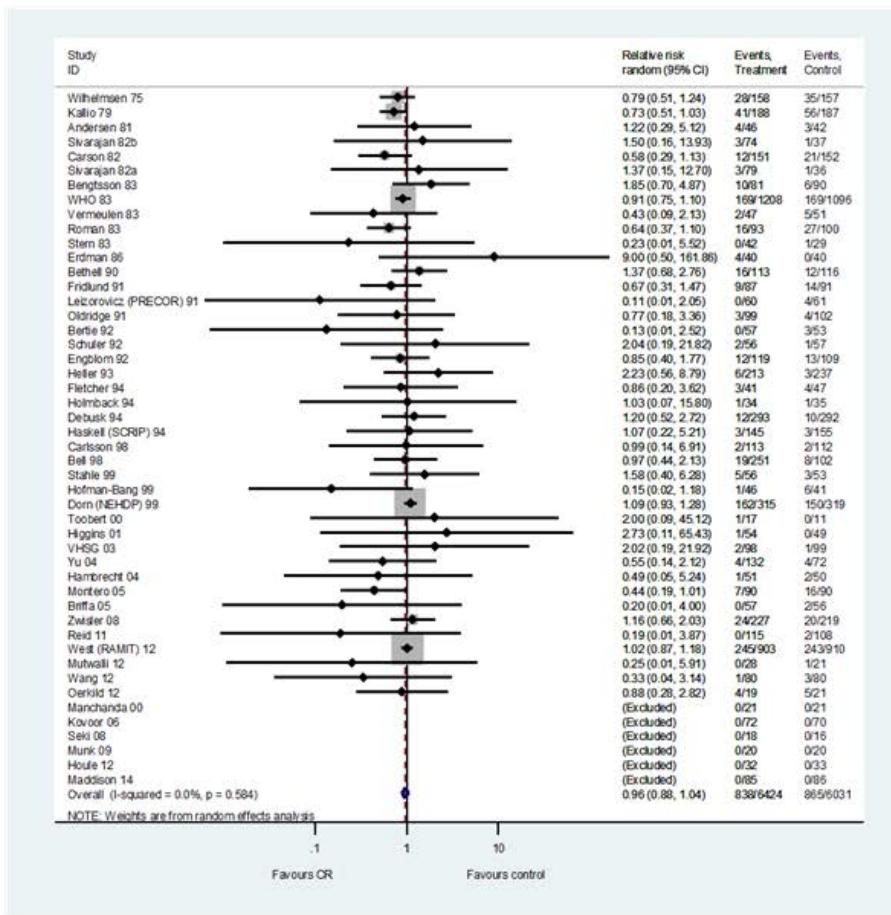


rehospitalisation
18% reduction
再入院治疗率
減少18%

Anderson et al., JACC 2016

CR - Cochrane review and meta-analysis 2016

心脏康复-《Cochrane系统评价》和荟萃分析 2016



total mortality
n.s. reduction
总死亡率减少

Anderson et al., JACC 2016

Cologne model of ambulant cardiac rehabilitation from January 1992 until December 1994 从1992年1月到1994年12月的门诊型心脏康复的科隆模式

the objective of the "Cologne model" was to evaluate, whether the transfer of the stationary cardiac rehabilitation programs into the ambulatory setting is achievable without deficits in efficiency, safety and overall quality:

“科隆模式”的目标是评估是否可以在没有效率、安全性和整体质量不足的情况下将固定型的住院心脏康复方案应用到流动型的门诊心脏康复模式。

n = 108 CAD-patients (94 men, 14 women; age 52.3±8.0), duration 4 weeks, 1-year and 3-year-controls:

数量=108 冠心病患者 (94个男人、14个女人; 年龄 52.3 ± 8.0)，时长 4周、1年和3年对照
exercise tolerance increased highly significantly, total cholesterol decreased in the high-risk-group (pre-statin era!)

运动耐受性显著增长，高风险组的总胆固醇水平降低 (广泛使用他汀类药物前)

Rost et al 1997, 1999
Bjarnason-Wehrens et al 2003



Deutsche
Sporthochschule Köln
German Sport University Cologne

Outcomes of Cardiac Rehabilitation Treatment and Cost-effectiveness Relations - A Comparison between Inpatient and Outpatient Rehabilitation Programmes

心脏康复治疗结果和成本效益关系-住院和门诊康复方案的对比

regarding the dominance of inpatient medical CR programmes efforts have emerged over the last few years to strengthen outpatient medical CR programmes in Germany ... in summary, the different rehabilitation programmes **can be regarded as comparable concerning effectiveness** and costs following CR

关于住院医学心脏康复方案的主导地位，过去几年中，已经有人在努力增强德国的门诊医学心脏康复方案...总结来说，这两种康复方案**在康复后的成本效益和成本方面相似。**

vom Orde et al 2002

Universität Bielefeld

BMJ

RESEARCH

以家庭为基础和以医院为基础的心脏康复的对比：Cochrane系统评价和荟萃分析

Home based versus centre based cardiac rehabilitation: Cochrane systematic review and meta-analysis

Hasnain M Dalal, honorary clinical lecturer,¹ general practitioner,² Anna Zawada, senior analyst,³ Kate Jolly, senior lecturer in public health and epidemiology,⁴ Tiffany Moxham, information specialist,⁵ Rod S Taylor, associate professor in health services research⁵

12 studies, n = 1938,
follow-up ~ 12 months (24 months)
12 项研究，数量=1938， 随访 12个月（24月）

Dalal et al 2010

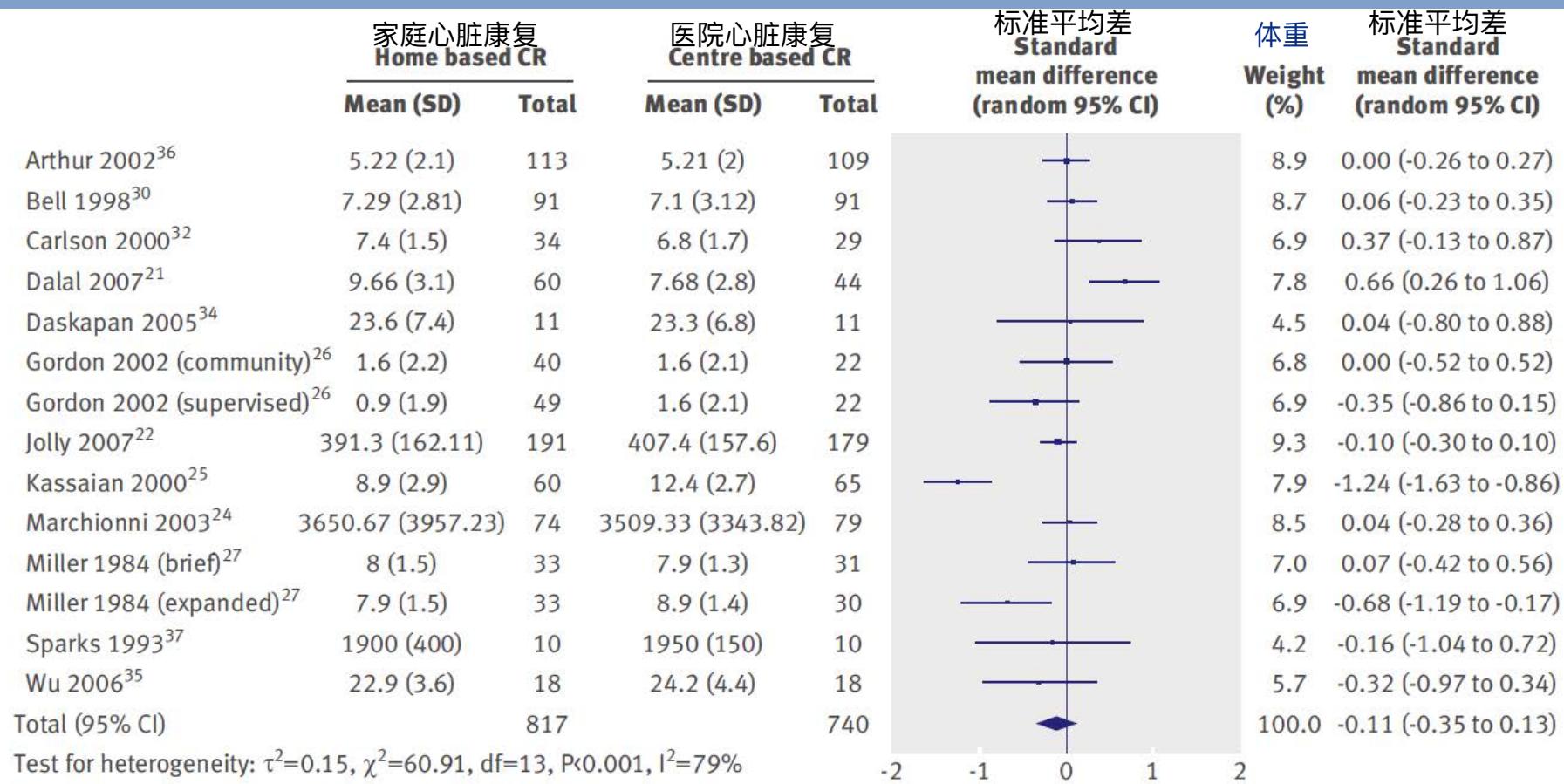


THE COCHRANE
COLLABORATION®

CR programs – home based versus centre based

心脏康复方案 - 以家庭为基础 VS 以医院为基础

SIEG REHA SIEG PHYSIO-SPORT



Test for heterogeneity: $\tau^2=0.15$, $\chi^2=60.91$, df=13, P<0.001, $I^2=79\%$

Test for overall effect: $z=0.91$, P=0.36

Fig 2 | Exercise capacity with home based and centre based cardiac rehabilitation (CR) at 3-12 months of follow-up

Dalal et al 2010 家庭和医院心脏康复3-12月随访中的运动能力



CR programs – home based versus centre based

心脏康复方案 - 以家庭为基础 VS 以医院为基础

SIEG REHA SIEG PHYSIO-SPORT

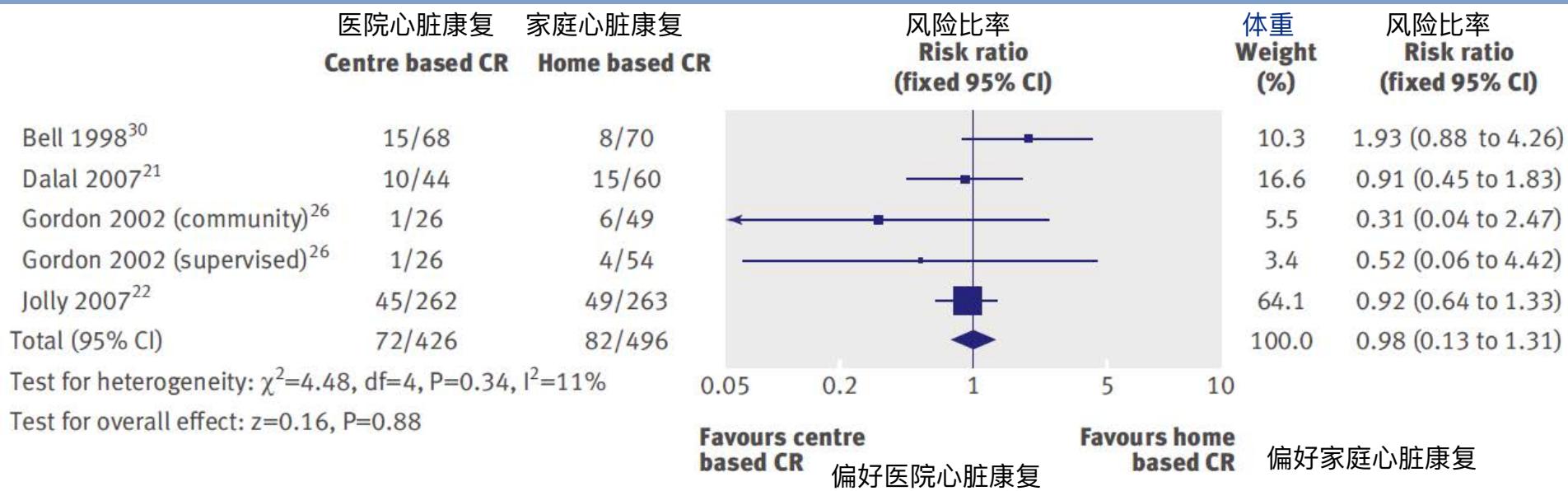


Fig 9 Relative risk of smoking with home based and centre based cardiac rehabilitation at 3-12 months of follow-up

表9 家庭和医院心脏康复3-12月随访中的抽烟相对风险

Dalal et al 2010



CR programs – home based versus centre based

心脏康复方案 - 以家庭为基础 VS 以医院为基础

SIEG REHA SIEG PHYSIO-SPORT

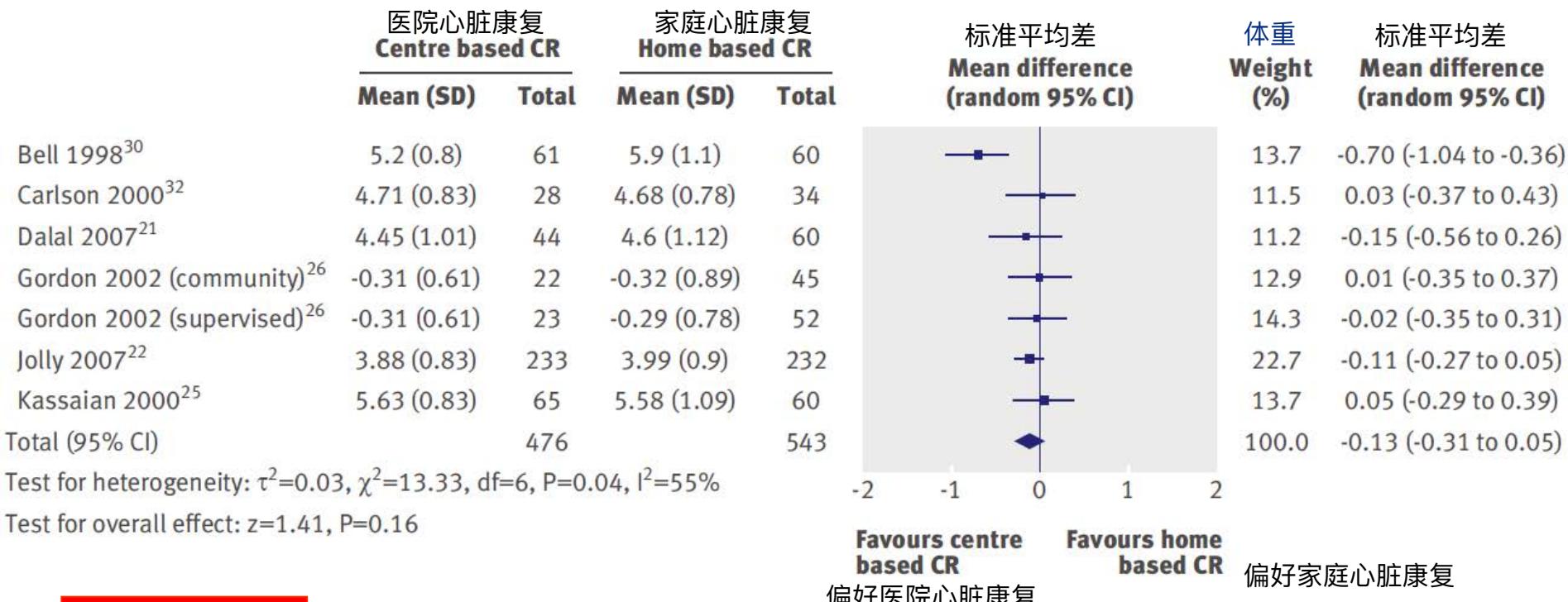


Fig 5 Total cholesterol (mmol/l) with home based and centre based cardiac rehabilitation at 3-12 months of follow-up

表5 家庭和医院心脏康复3-12月随访中的总胆固醇

Dalal et al 2010



CR programs – home based versus centre based

心脏康复方案 - 以家庭为基础 VS 以医院为基础

SIEG REHA SIEG PHYSIO-SPORT

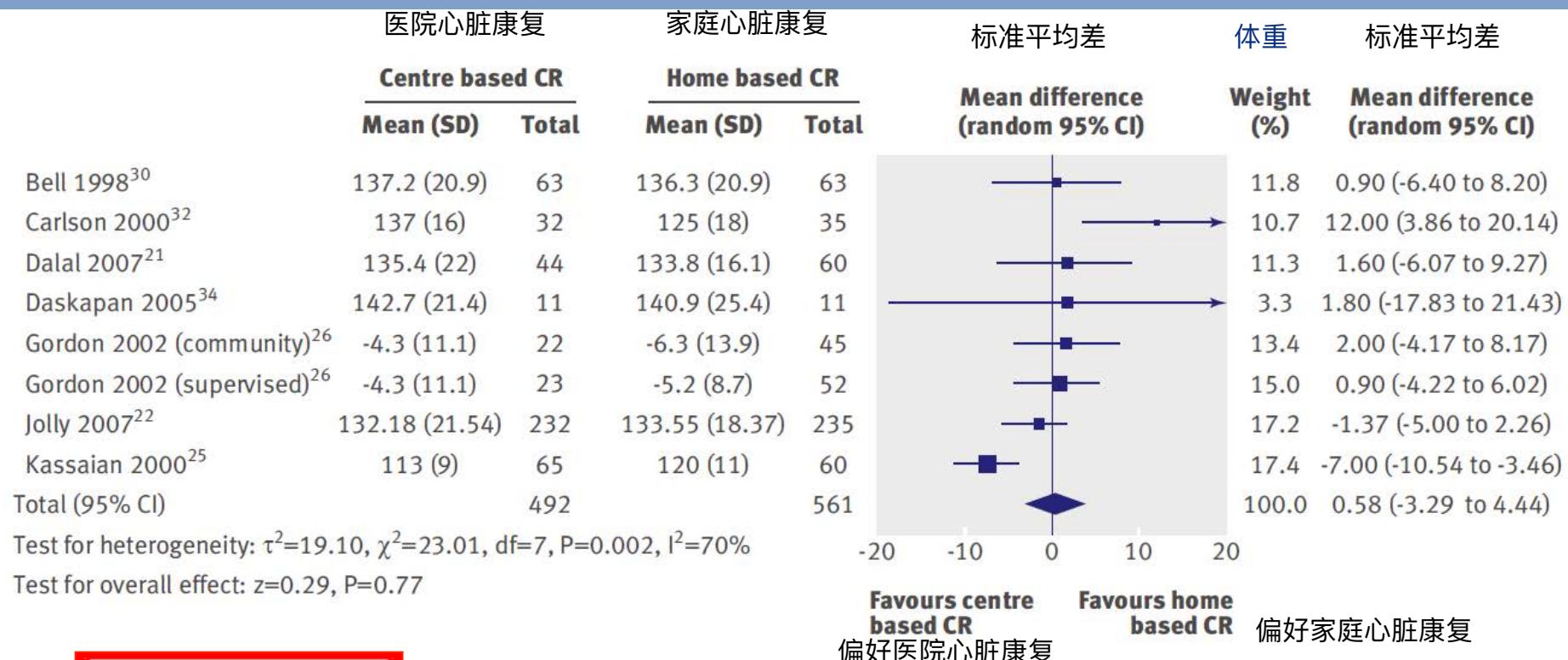


Fig 3 Systolic blood pressure with home based and centre based cardiac rehabilitation at 3-12 months of follow-up

表3 家庭和医院心脏康复3-12月随访中的收缩压

Dalal et al 2010



CR programs – home based versus centre based

心脏康复方案 - 以家庭为基础 VS 以医院为基础

SIEG REHA SIEG PHYSIO-SPORT

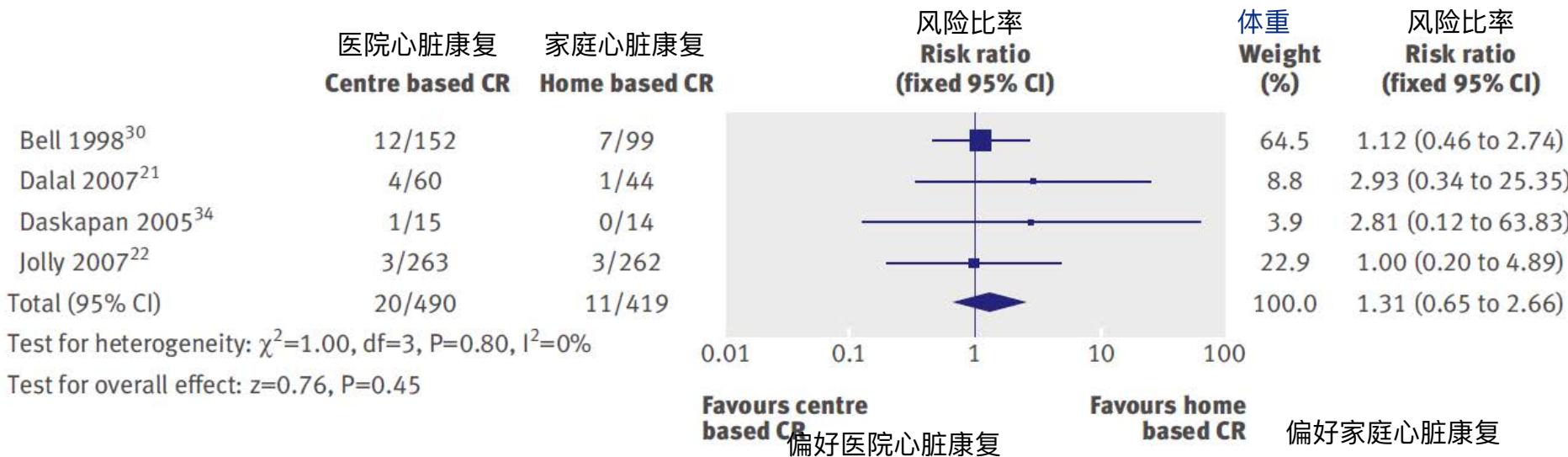


Fig 10 Mortality with home based and centre based cardiac rehabilitation at 3-12 months of follow-up

表10 家庭和医院心脏康复3-12月随访中的死亡率

home and centre based forms of cardiac rehabilitation seem to be equally effective in improving clinical and health related QoL-outcomes in patients with a low risk of further events after myocardial infarction or revascularisation ...

对于心肌梗塞或血管重建后再次发病风险低的患者，在改善临床和健康相关的生活质量方面，以家庭和以医院为基础的心脏康复似乎同样有效 Dalal et al 2010



CR programs – home based versus centre based

心脏康复方案 - 以家庭为基础 VS 以医院为基础

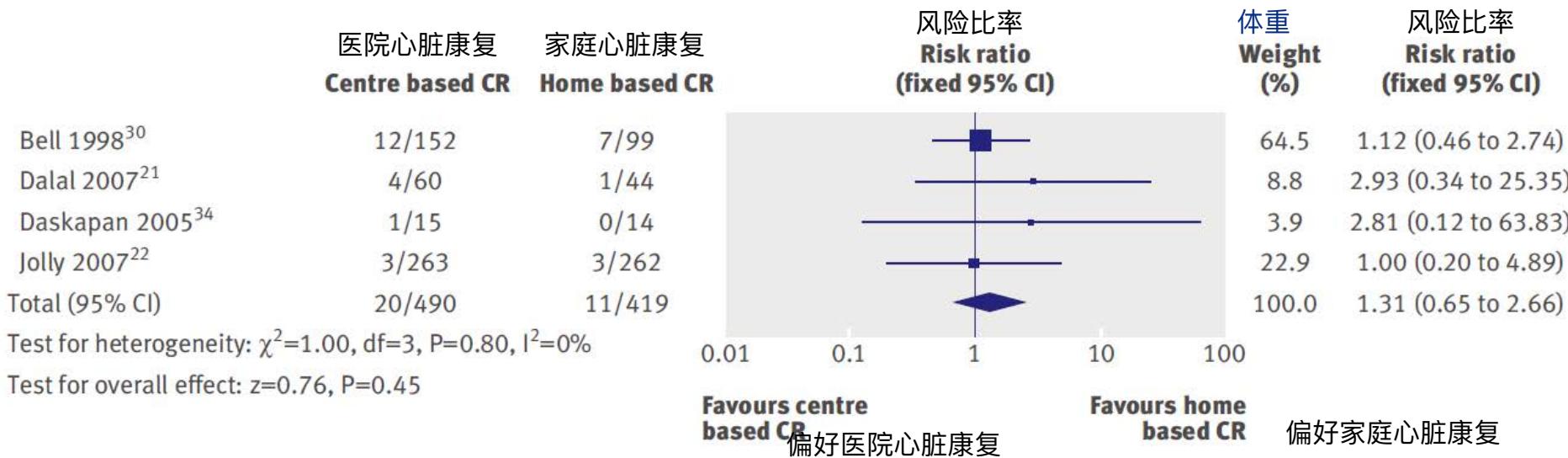


Fig 10 Mortality with home based and centre based cardiac rehabilitation at 3-12 months of follow-up

表10 家庭和医院心脏康复3-12月随访中的死亡率

... with home based CR programs such as the "Heart Manual" the choice of participating in a ... supervised centre based or evidence based home based program should reflect the preference of the individual patient

以家庭为基础的心脏康复方案，比如“心脏手册”，选择参加一个...有监督的医院康复方案或者循证家庭方案应该反映患者的个人偏好。 Dalal et al 2010

1. Inpatient (stationary) program: Phase I

takes place in the hospital after having experienced a heart attack, heart surgery, or other major heart problems

住院 (固定型) 方案：第一阶段

经历过心脏病、心脏手术或者其他严重心脏问题后，在医院进行

2. In- or outpatient (ambulatory) program: Phase II

CR with individual core components (3 weeks)

(inpatient) to several months (outpatient incl. RTW)

住院或门诊 (流动型) 方案：第二阶段

包含个人化核心内容（3周的住院心脏康复）以及为期几个月的门诊（门诊，包括重返工作）

3. Outpatient program: Phase III

门诊方案：第二阶段

regular supervised exercise ("heart groups"), rehab and community centres, sports clubs, heart foundations incl. further education, self counselling, RTW, ...

有监督的常规性锻炼（“心脏组”），康复和社区中心、体育俱乐部、心脏基金会，包括继续教育、自我辅导、重返工作 (RTW)

1. **CR directly after MI/ACS, PCI, CABG, valve repair or replacement, ICD-/CRT-therapy, other thoracic surgery, ...**

MI/ACS、经皮冠状动脉介入治疗、冠状动脉旁路移植术、瓣膜修复或更换、除颤器/起搏器、其他胸腔手术...后直接开始心脏康复

„direct or after-hospital-rehabilitation“

“直接康复或者出院后康复”

approx. 2/3 of CR attendances

约有2/3的人参加

2. **CR in favour of a stable chronic cardiovascular disease (CAD, CHF, high-risk-patients, ...)**

心脏康复有利于稳定型慢性心血管疾病（冠心病、慢性心力衰竭，高危患者，...）

„curative rehabilitation“

“治疗性康复”

approx. 1/3 of CR attendances

约有1/3的人参加



1. CR-requirement / neediness

acute or chronic CVD: to promote return to work,
to avoid progress of disease, follow diseases,
to relieve symptoms, to minimize risk-factors, disability, need of care,

心脏康复-要求/需求

急性或慢性心血管疾病：帮助患者重返工作岗位，避免疾病进展和后遗症，减轻症状，并使风险因素、残疾和医护需求最小化。

2. CR-ability

diagnosis and treatment completed, no need of
constant monitoring, no secondary wound-healing,
sufficient mobility, motivation and perception

心脏康复-能力

诊断和治疗已结束，不需要持续性监控，没有次生伤口愈合，活动性、动力和知觉都很充分

3. (positive) CR-prognosis return to work, avoidance of care or progress of disease

(积极的) 心脏康复-预后 重返工作岗位，避免护理或疾病进展

Thank you !

谢谢 !