

Meeting Nazionale ITACARE-P 2025

La Cardiologia Riabilitativa e Preventiva
come snodo fondamentale
della cura della persona con cardiopatia

*Quando il training è “advanced”.
Prescrivere esercizio fisico al cardiopatico
complesso.*



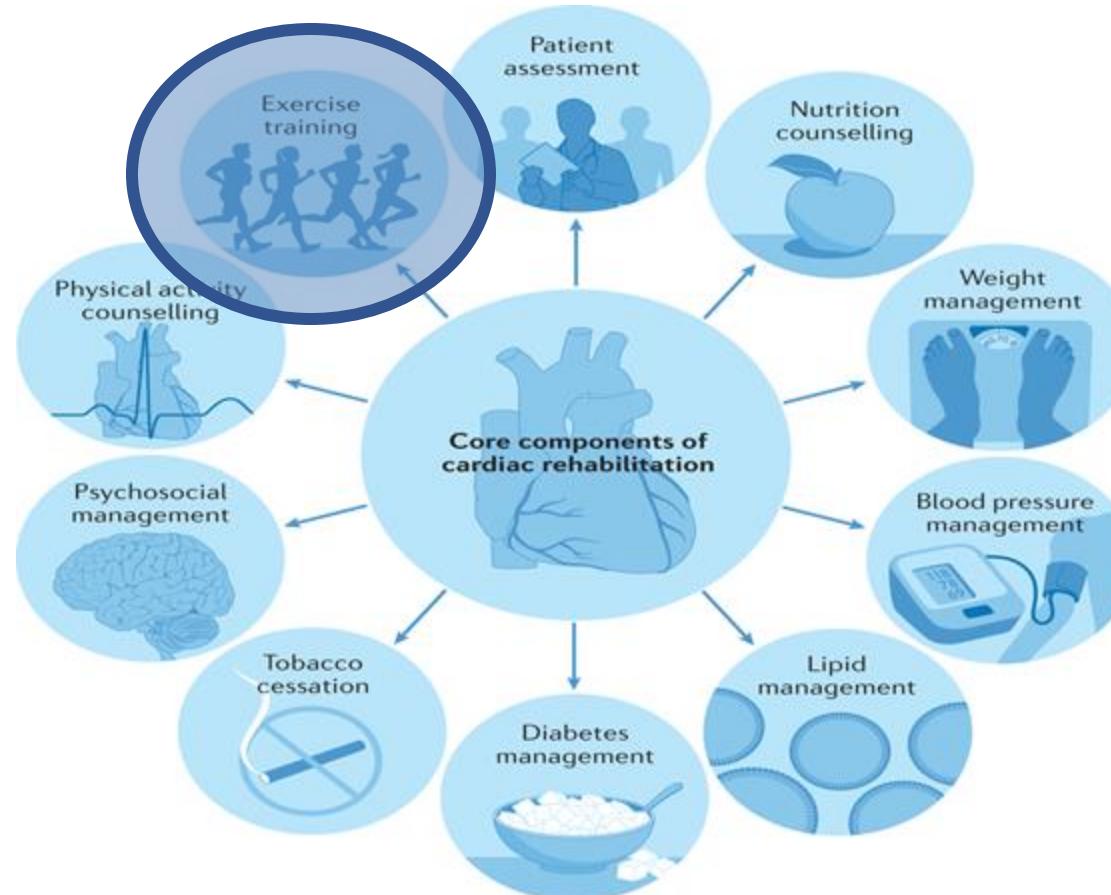
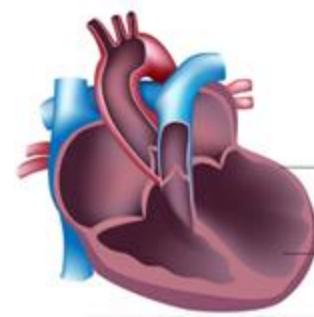
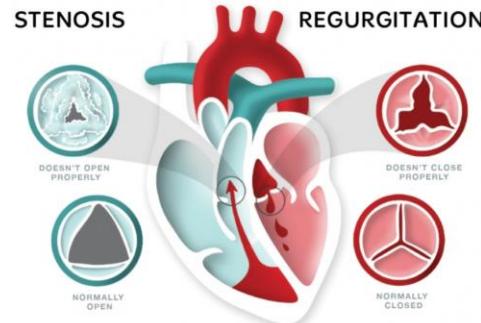
CENTRO CONGRESSI FRENTANI
Roma, 21-22 novembre 2025

Dott. Claudio Stefano Centorbi
Centro di Cardiologia e riabilitazione
Cagliari

CONSALUS



L'esercizio fisico come componente fondante la riabilitazione cardiovascolare



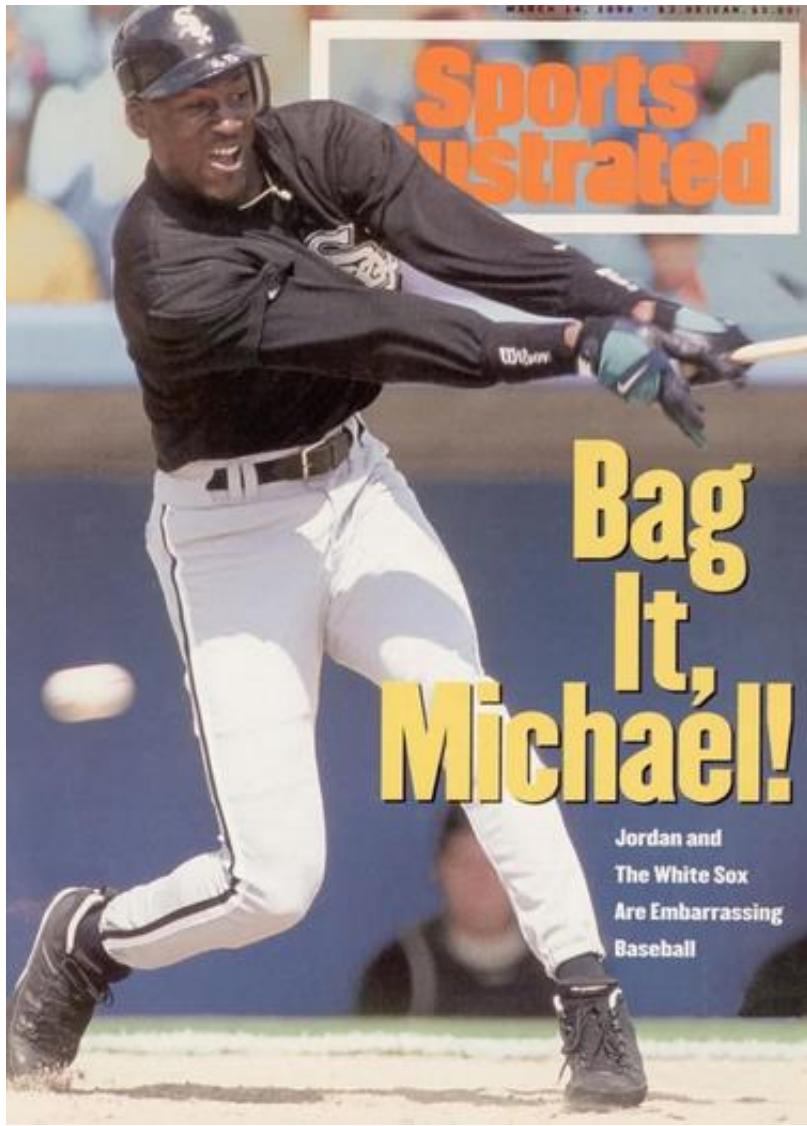
European Journal of Preventive Cardiology (2021) **28**, 460–495
doi:10.1177/2047487320913379

POSITION PAPER
Cardiac rehabilitation

Secondary prevention through comprehensive cardiovascular rehabilitation: From knowledge to implementation. 2020 update. A position paper from the Secondary Prevention and Rehabilitation Section of the European Association of Preventive Cardiology









***Il Cardiopatico ‘‘complesso’’ non è da proteggere DALL’ attività fisica,
ma da proteggere CON l’attività fisica, ‘‘cucita su misura’’***





Ruolo del CPET

Table I Core components and objectives common to all clinical conditions.

Components

Patient assessment

- Clinical history: screening for cardiovascular risk factors, comorbidities and disabilities
 - Symptoms: cardiovascular disease (NYHA class for dyspnoea, CCS class for angina, and Fontaine/Rutherford class for lower extremities PAD)
 - Adherence: to the medical regime, adequate lifestyle, and self-monitoring (weight, BP, symptoms)
 - Physical examination: general health status, heart failure signs, cardiac and carotid murmurs, BP control, extremities for presence of arterial pulses and orthopaedic pathology, cerebrovascular events with/without neurological sequelae
 - ECG: heart rate, rhythm, repolarization changes
 - Cardiac imaging (two-dimensional and Doppler echocardiography): in particular left ventricular systolic and diastolic function, right ventricular systolic function and heart valve diseases evaluation when appropriate
 - Blood testing: routine biochemical assay, fasting blood glucose, HbA1C, total cholesterol, LDL-C, HDL-C, triglycerides, uric acid, parameters of renal function, peptides
 - Physical activity level: domestic, occupational and recreational needs, activities relevant to age, gender and daily life, readiness to change behaviour, self-confidence, barriers to increased physical activity, and social support in making positive changes
 - Evaluation of frailty by validated scores (see the Frailty subsection)
-
- **Peak exercise capacity: symptom-limited exercise testing, either on bicycle ergometer or on treadmill, by means of CPET as a gold standard.** If the patient cannot do any treadmill or bicycle (not so frequent) a test like 6MWT or ISWT should be performed (but only as necessary alternative). In frail patients or patients unable to walk, the SPPB or other chair based tests should be considered.



European Society
of Cardiology
European Journal of Preventive Cardiology (2021) 28, 460–495
doi:10.1177/2047487320913379

POSITION PAPER
Cardiac rehabilitation

Secondary prevention through comprehensive cardiovascular rehabilitation: From knowledge to implementation. 2020 update. A position paper from the Secondary Prevention and Rehabilitation Section of the European Association of Preventive Cardiology



Table 2 Classification of aerobic exercise intensity ¹⁷				Studio delle soglie	
Intensity	VO ₂ max (%)	HRmax (%)	HRR (%)	RPE scale	Training zone
Low intensity, light exercise	<40	<55	<40	10–11	Aerobic
Moderate intensity exercise	40–69	55–74	40–69	12–13	Aerobic
High intensity	70–85	75–90	70–85	14–16	Aerobic + lactate
Very high intense exercise	>85	>90	>85	17–19	Aerobic + lactate + anaerobic

Reproduced with permission from reference.¹⁷
HR_{max}, maximal heart rate; HRR, heart rate reserve; RPE, ratings of perceived exertion; VO_{2peak}, peak oxygen uptake.

BORG

6MWT

vs

EXERCISE TESTING

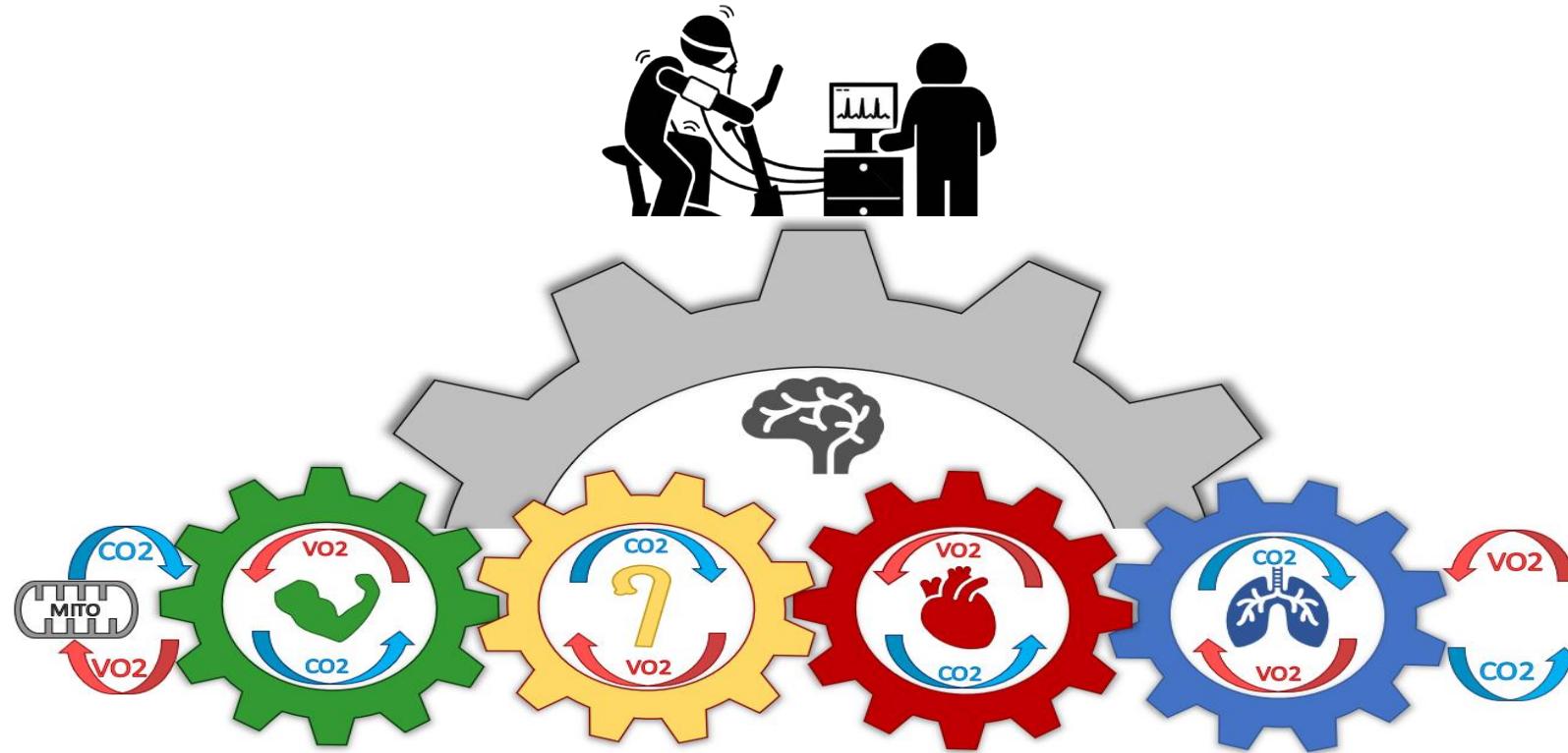
vs

CARDIOPULMONARY EXERCISE TESTING





Test Cardiopolmonare



Ruoto fondamentale in ambito:

Diagnostico

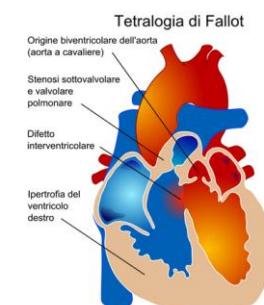
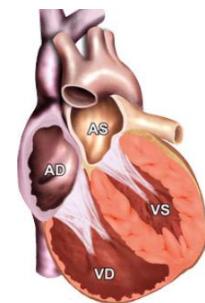
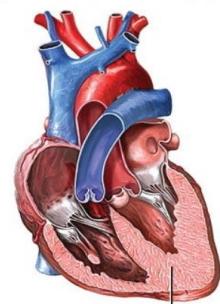
Prescrittivo

Prognostico

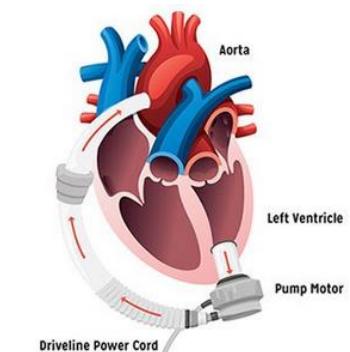
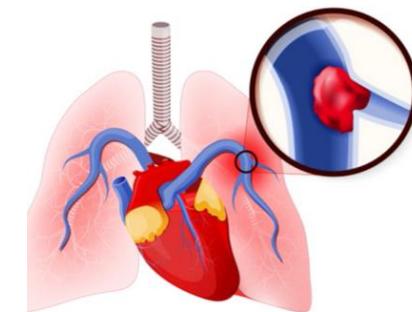


Il Cardiopatico ‘‘complesso’’: il suo identikit

- **Cardiomiopatia ipertrofica**
- **Cardiomiopatia aritmogena**
- **Cardiopatie congenite**

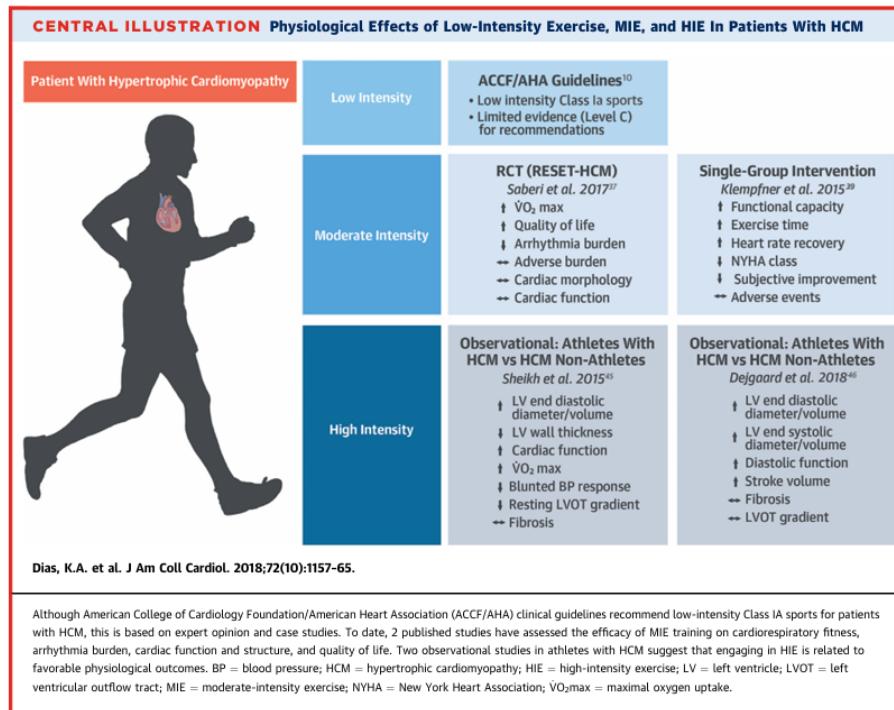


- **Cardiopatie pre-intervento**
- **Cardiopatia post-embolia polmonare e/o ipertensione polmonare**
- **Portatori di Device avanzati (LVAD)**





Cardiomiopatia ipertrofica



THE PRESENT AND FUTURE

JACC REVIEW TOPIC OF THE WEEK

Exercise Training for Patients With Hypertrophic Cardiomyopathy

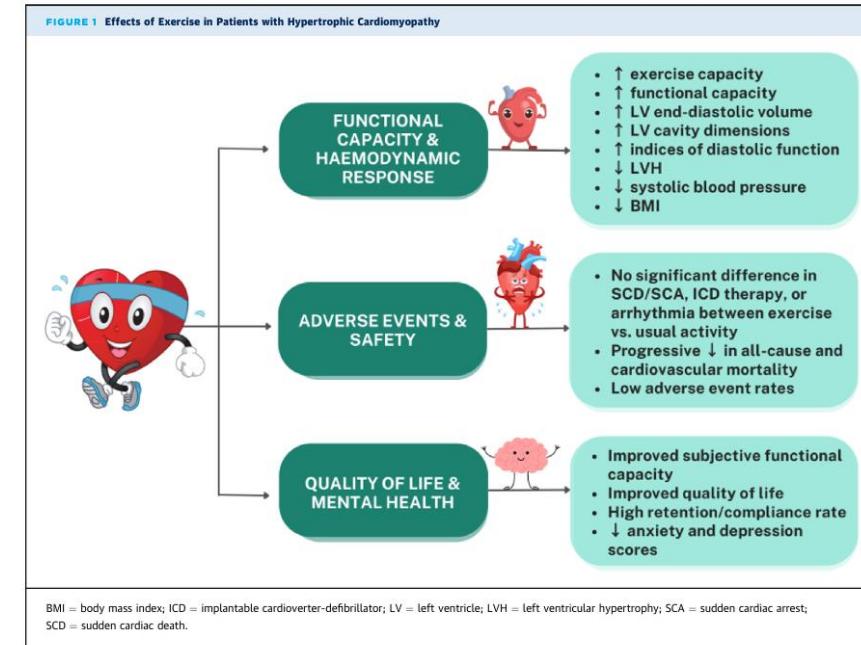
JACC Review Topic of the Week

Katrin A. Dias, PhD,^{a,b} Mark S. Link, MD,^b Benjamin D. Levine, MD^{a,b}

^aDepartment of Internal Medicine, Mayo Clinic Jacksonville, Jacksonville, Florida, USA; ^bMayo Clinic Jacksonville, Jacksonville, Florida, USA



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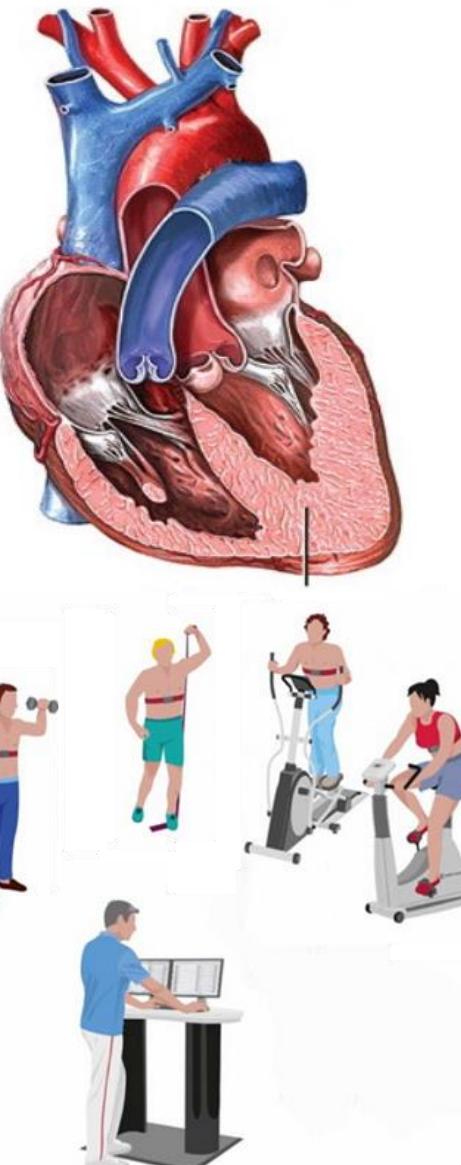
JOURNAL ARTICLE

Efficacy of exercise training in symptomatic patients with hypertrophic cardiomyopathy: Results of a structured exercise training program in a cardiac rehabilitation center

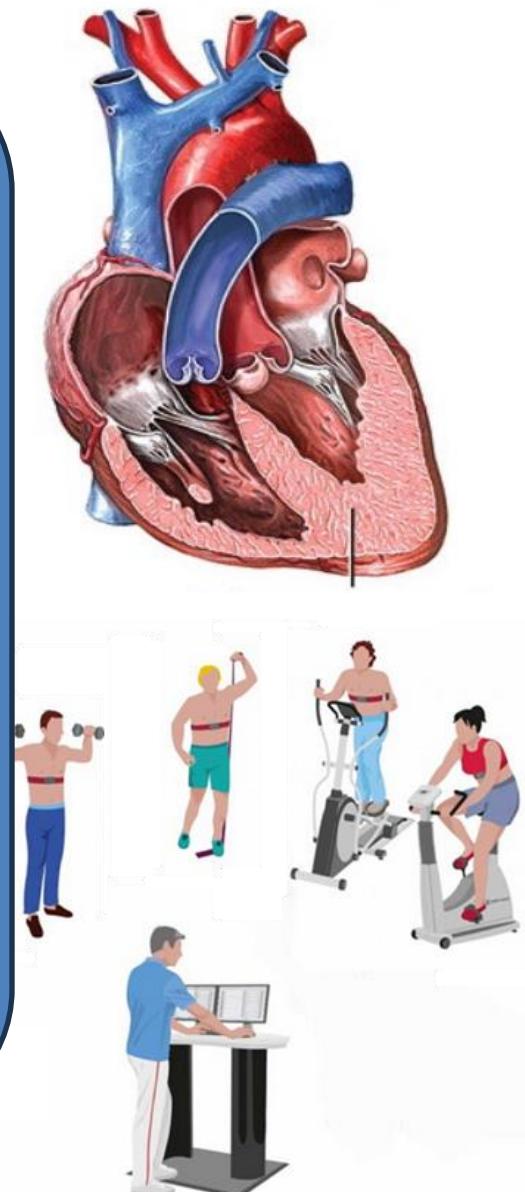
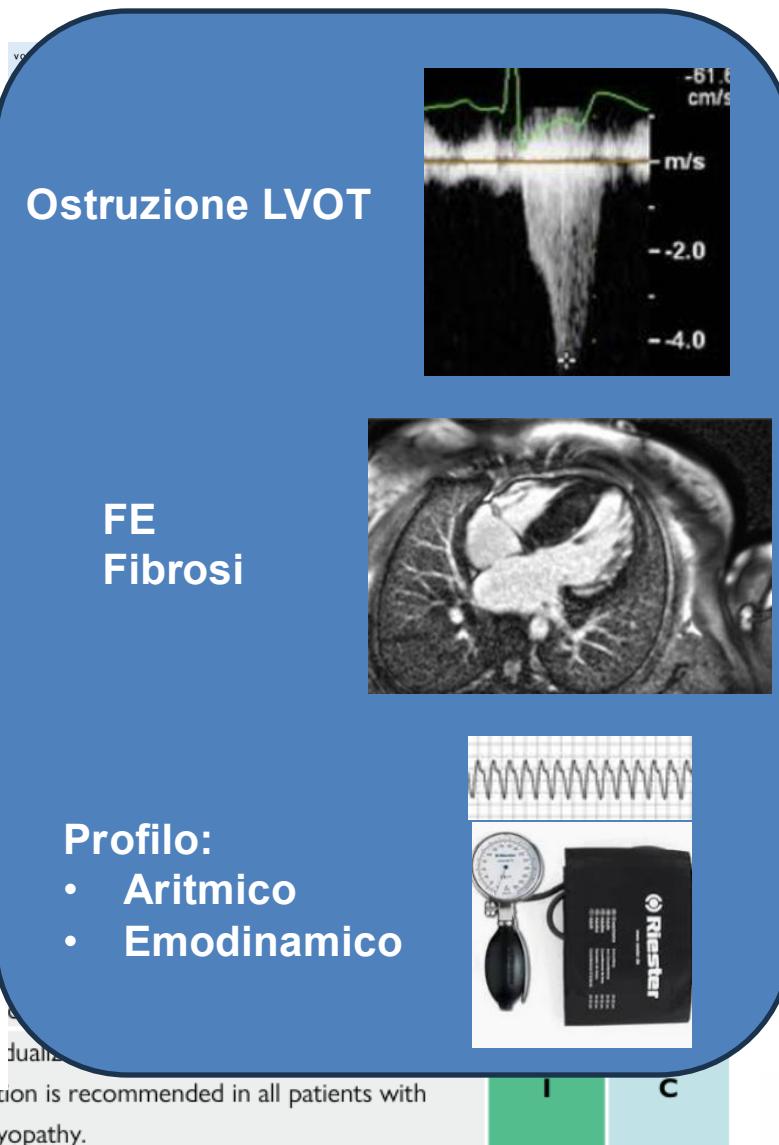
Robert Klempfner , Tamir Kamerman, Ehud Schwammthal, Amira Nahshon, Ilan Hay, Ilan Goldenberg, Freimark Dov, Michael Arad, MD

European Journal of Preventive Cardiology, Volume 22, Issue 1, 1 January 2015, Pages 13–19, <https://doi.org/10.1177/2047487313501277>

Published: 29 August 2020 Article history ▾



Cardiomiopatia ipertrofica



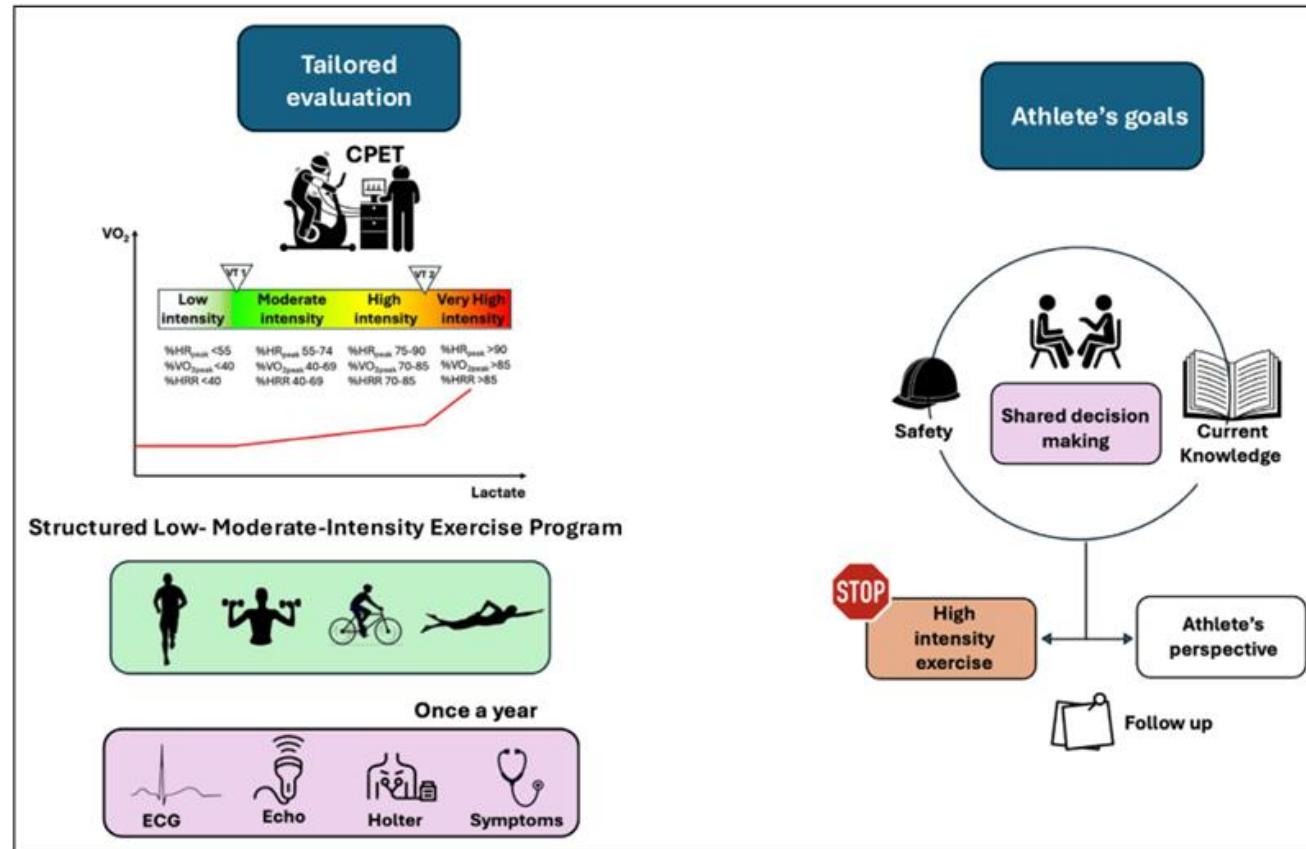


Cardiomiopatia Aritmogena

Safety of American Heart Association minimum exercise for de

Abhishek C. Sawant, MD, MPH, Annelise M. Karp, MD, Britney Murray, MS, Aditya Bhonsale, MD, Hugh Calkins, MD, FFRS, Cynthia A. Janicki, MD, FRCR

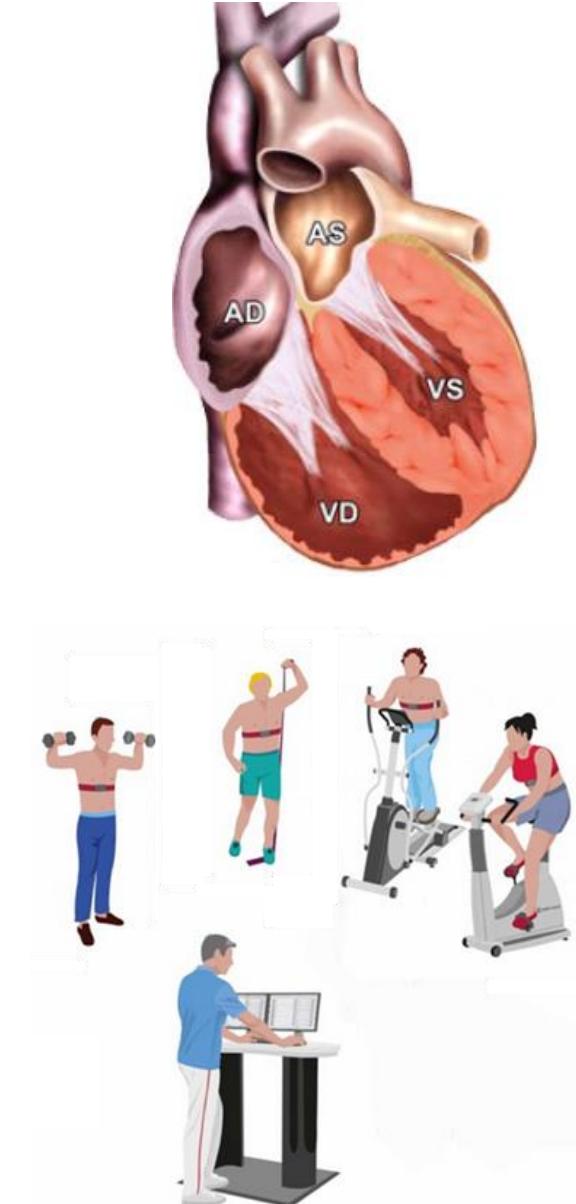
From the Department of Medicine, Division of



CONTEMPORARY REVIEW

Exercise Prescription in Arrhythmogenic Cardiomyopathy: Finding the Right Balance Between Risks and Benefits

Lorenzo-Lupo Del Gatto, MD; Jennie Han, MD; Silvio Romano, MD; Luigi Sciarra, MD; Angeliki Asimaki, MSc, PhD; Michael Papadakis, MBBS, MRCP, MD; Sanjay Sharma, BSc, MD; Gherardo Finocchiaro, MD, PhD





Cardiomiopatia Aritmogena



European Heart Journal (2023) 00, 1–124
https://doi.org/10.1093/euroheart/ehad194

ESC GUIDELINES

2023 ESC Guidelines for the management of cardiomyopathies

Developed by the task force on the management of cardiomyopathies of the European Society of Cardiology (ESC)

ARVC

Avoidance of high-intensity exercise, including competitive sport, may be considered in genotype-positive/phenotype-negative individuals in families with ARVC.^{1111,1116,1117}

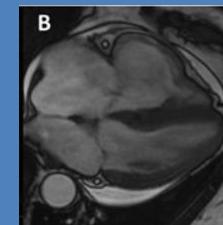
Moderate- and/or high-intensity exercise, including competitive sport, is not recommended in individuals with ARVC.^{181,1111–1114}

IIb	C
III	B

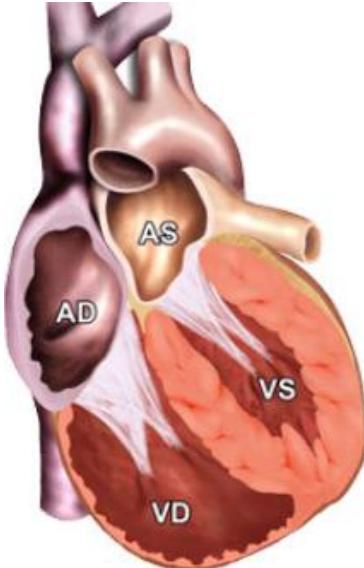
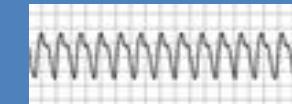
Recommendation Table 31 — Exercise recommendations for patients with cardiomyopathy

Recommendations	Class ^a	Level ^b
All cardiomyopathies		
Regular low- to moderate-intensity exercise is recommended in all able individuals with cardiomyopathy.	I	C
An individualized risk assessment for exercise prescription is recommended in all patients with cardiomyopathy.	I	C

Funzione Ventricolare



Profilo Aritmico





Cardiopatie congenite



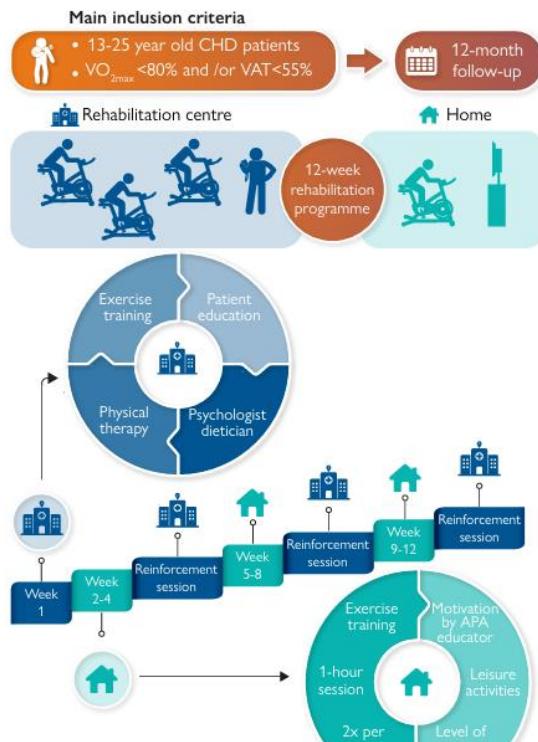
ESC

European Society
of CardiologyEuropean Heart Journal (2024) 00, 1–16
<https://doi.org/10.1093/eurheartj/ehae085>

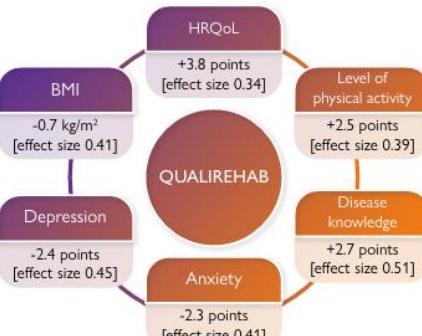
CLINICAL RESEARCH

Congenital heart disease

Early hybrid cardiac rehabilitation in congenital heart disease: the QUALIREHAB trial

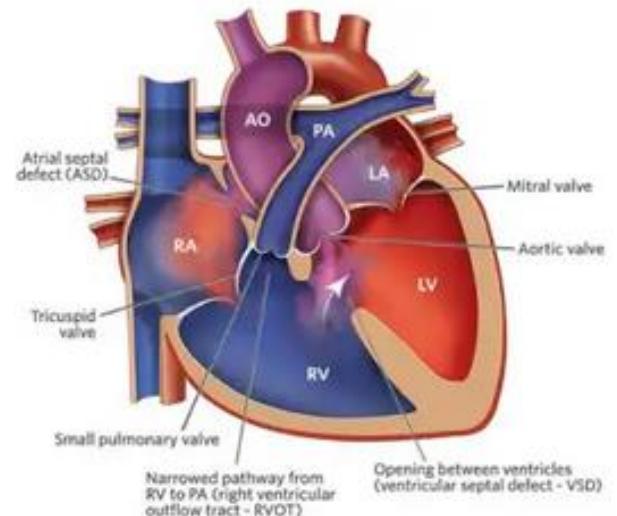


142 adolescent and young adult CHD patients with impaired cardiopulmonary fitness randomly assigned to QUALIREHAB or standard of care



The QUALIREHAB programme improved HRQoL (primary outcome), BMI, physical activity, and disease knowledge

QoL





Cardiopatie congenite

POSITION PAPER

L'attività fisica nei soggetti con cardiopatia congenita in storia naturale ed operata. Task Force sull'attività fisica nel cardiopatico congenito della Società Italiana di Cardiologia Pediatrica e delle Cardiopatie Congenite

Raffaella Marzullo¹, Anna Balducci², Giulia Cafiero³, Barbara Cifra⁴, Gianluca Trocchio⁵, Maurizio Varnier⁶, Pierluigi Colonna¹ (Coordinatore)

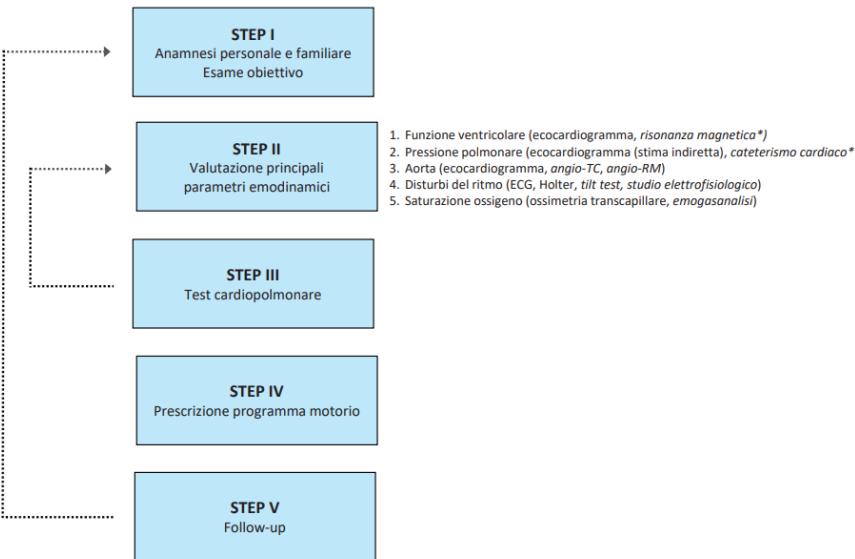


Figura 1. Percorso di valutazione clinico-funzionale finalizzato alla personalizzazione delle modalità e della tipologia di attività fisica.



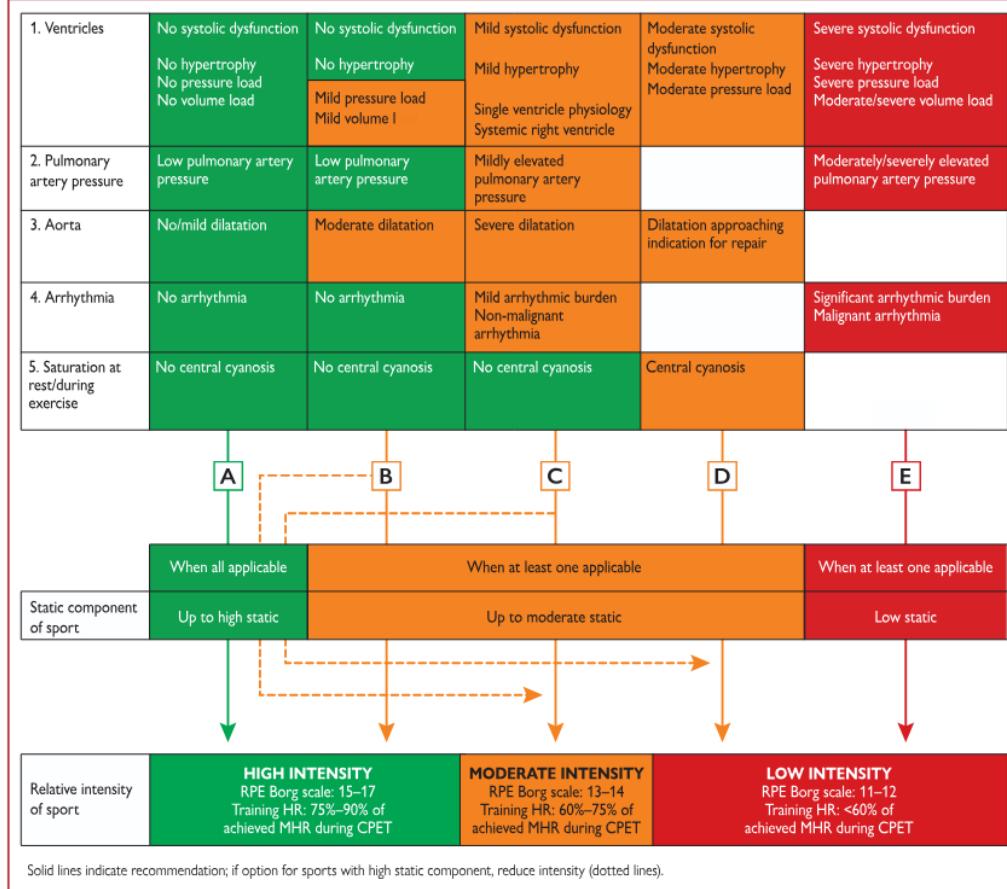
ESC

European Heart Journal (2021) 42, 17–96
doi:10.1093/euroheart/ehaa605

ESC GUIDELINES

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)





Cardiopatie pre-intervento

La pre-riabilitazione è un intervento multidisciplinare finalizzato a migliorare lo stato psicofisico prima dell'intervento chirurgico e favorire il decorso post-operatorio, sia per una più veloce ripresa sia per ridurre gli eventi avversi.

JOURNAL ARTICLE

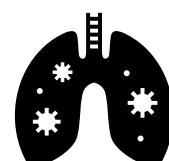
The impact of prehabilitation on post-surgical complications in patients undergoing non-urgent cardiovascular surgical intervention: Systematic review and meta-analysis

Filipe Marmelo ✉, Vânia Rocha, Daniel Moreira-Gonçalves

European Journal of Preventive Cardiology, Volume 25, Issue 4, 1 March 2018, Pages 404–417, <https://doi.org/10.1177/2047487317752373>

Published: 29 August 2020 Article history ▾

Capacità funzionale



Ospedalizzazione

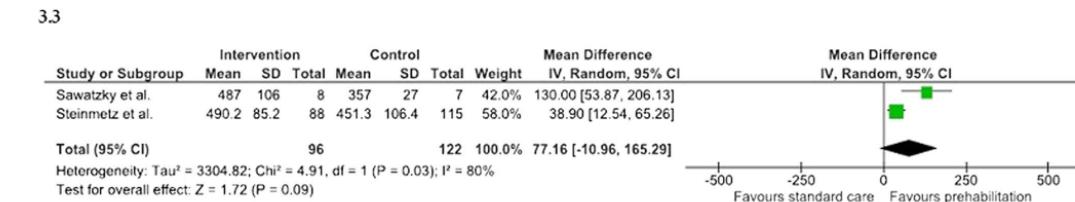
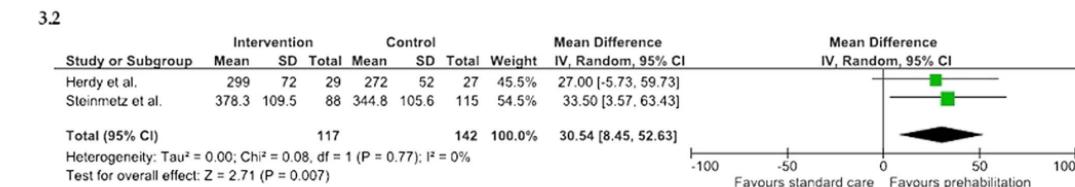
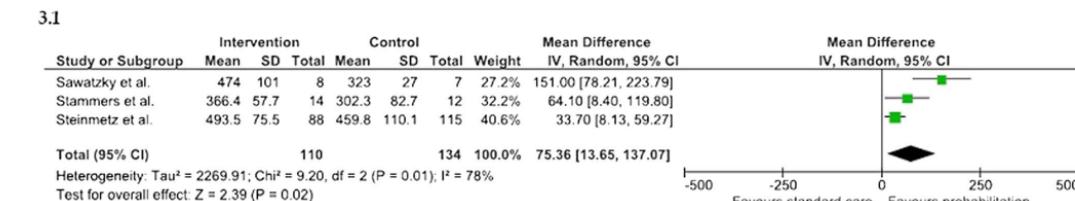


FIGURE 3. 1, Forest plot of the effect of prehabilitation versus standard care on 6MWD after intervention. 2, Forest plot of the effect of prehabilitation versus standard care on 6MWD after surgery. 3, Forest plot of the effect of prehabilitation versus standard care on 6MWD follow-up.

ORIGINAL RESEARCH ARTICLE

OPEN

Efficacy of Prehabilitation Before Cardiac Surgery

A Systematic Review and Meta-analysis

Carolin Steinmetz, PhD, Birna Bjarnason-Wehrens, PhD, Thomas Walther, MD,
Tim Fabian Schaffland, PhD, and Claudia Walther, MD



Cardiopatie pre-intervento



Riabilitazione respiratoria

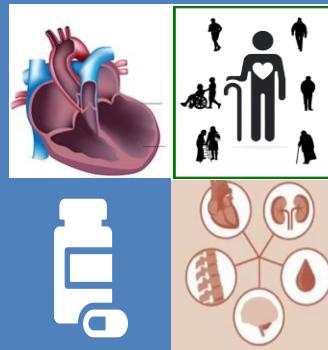


Riabilitazione fisica aerobica

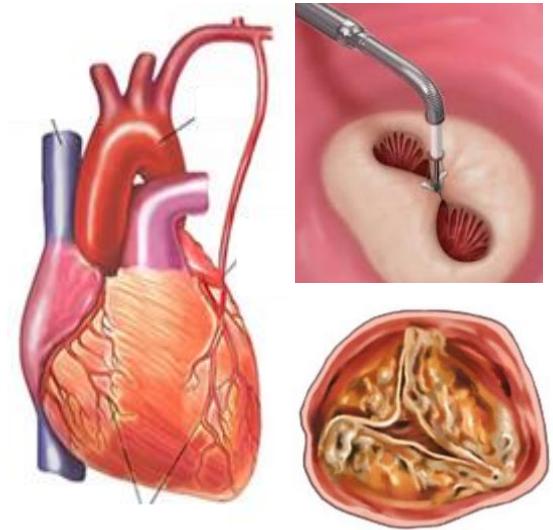
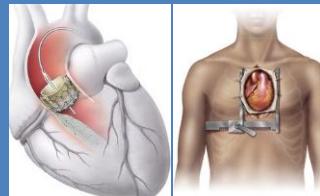
- Stato clinico:
- Ischemico
 - Aritmico
 - Emodinamico



Cardiopatia di base
Condizioni generali
Terapia
Comorbidità



Tipologia di
intervento





Post-embolia polmonare e/o ipertensione polmonare

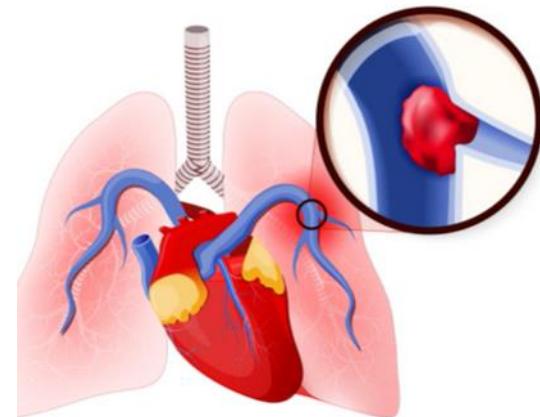
Review

The Role of Early Rehabilitation in Treatment of Acute Pulmonary Embolism—A Narrative Review

Kamil Salwa ¹ , Karol Kaziród-Wolski ^{1,2} , Dorota Rębak ³ and Janusz Sielski ^{1,2,*}

Authors	Year	Country	Type of Research	Specificity	Results
Cires-Drouet et al. [143]	2020	Netherlands	Prospective study	A structured 3-month physical conditioning regimen.	Exercise therapy at differentiated levels demonstrated safety following acute PE episodes.
Rolving et al. [144]	2020	Denmark	Randomized clinical trial	A short nursing-guided consultation combined with an 8-week home-based physical conditioning regimen.	No improvement was observed in physical performance or dyspnea symptoms. Furthermore, no additional adverse effects were recorded.
Nopp et al. [7]	2020	Austria	Prospective study	A structured rehabilitation program involving different types training lasting a minimum of 6 weeks.	The 6-minute walk test indicated enhanced outcomes. Significant positive motor function increases were also recorded. Additionally, 78% of patients exhibited improved health status during extended follow-up.
Boon et al. [4]	2021	Netherlands	Observational cohort study	A 12-week outpatient pulmonary rehabilitation program with consultations from a pulmonologist and physiotherapist.	Enhanced training intensity resulted in improvements in PE-specific quality of life, reduced fatigue, and better functional status.
Gleditsch et al. [88]	2022	Norway	Cohort sub-study	An outpatient pulmonary rehabilitation program supervised during 1-hour training sessions, twice a week, for 8 weeks.	CMR parameters were compared before and after the intervention. Both absolute RV global longitudinal strain and RV lateral longitudinal strain showed significant reductions.
Azzarito et al. [8]	2024	Italy	Prospective study	A 4-week inpatient cardiopulmonary rehabilitation program began 8 days following the pulmonary event.	All patients demonstrated improvements in both dyspnea and physical performance. No adverse effects related to the rehabilitation program were reported.

QoL



Functional capacity





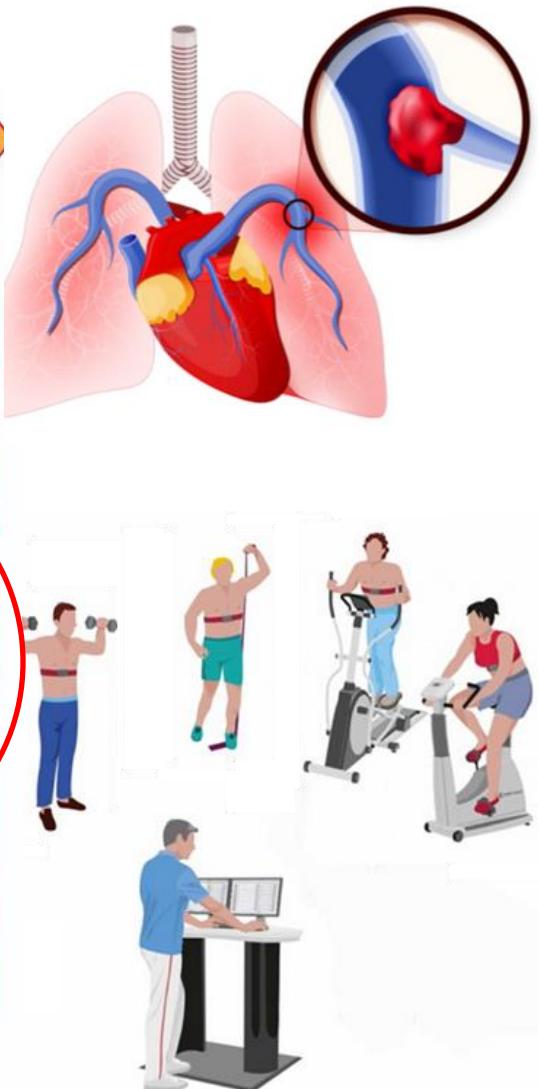
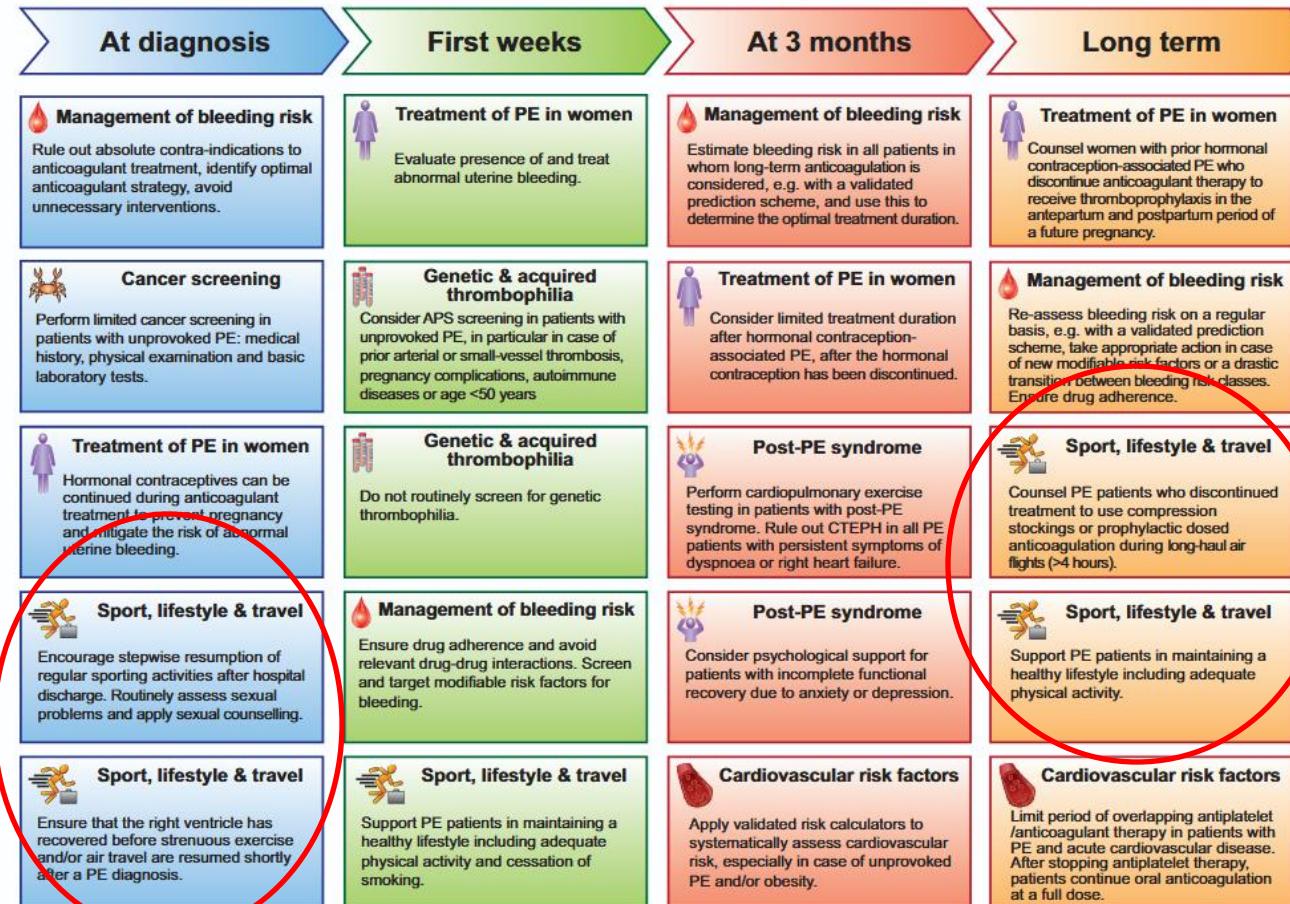
Post-embolia polmonare e/o ipertensione polmonare



European Heart Journal (2022) 43, 183–189
<https://doi.org/10.1093/euroheartj/ehab816>

SPECIAL ARTICLE

Optimal follow-up after acute pulmonary embolism: a position paper of the European Society of Cardiology Working Group on Pulmonary Circulation and Right Ventricular Function, in collaboration with the European Society of Cardiology Working Group on Atherosclerosis and Vascular Biology, endorsed by the European Respiratory Society





Post-embolia polmonare e/o ipertensione polmonare



Riabilitazione respiratoria



Riabilitazione fisica aerobica

STUDY PROTOCOL

Open Access



Pulmonary rehabilitation to improve physical capacity, dyspnea, and quality of life following pulmonary embolism (the PeRehab study): study protocol for a two-center randomized controlled trial

Stacey Haukeland-Parker^{1,2*}, Øyvind Jerven^{2,3}, Hege Hølmo Johannessen^{1,4}, Jostein Gleditsch^{2,5}, Knut Stavem^{2,6,7}, Kjetil Steine^{2,8}, Martijn A. Spruit^{9,10,11}, René Holst^{2,3}, Mazdak Tavoly^{3,12}, Frederikus A. Klok¹³ and Waleed Ghanima^{2,14}

Stato clinico:

- Dispnea residua
- Aritmico
- Emodinamico



Condizioni generali
Terapia
Comorbidità



Contents lists available at ScienceDirect

Thrombosis Research

journal homepage: www.elsevier.com/locate/thromres

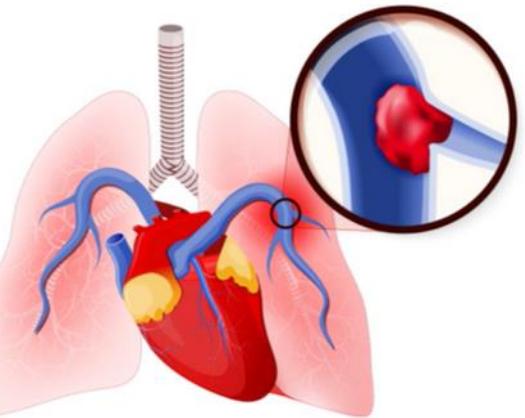
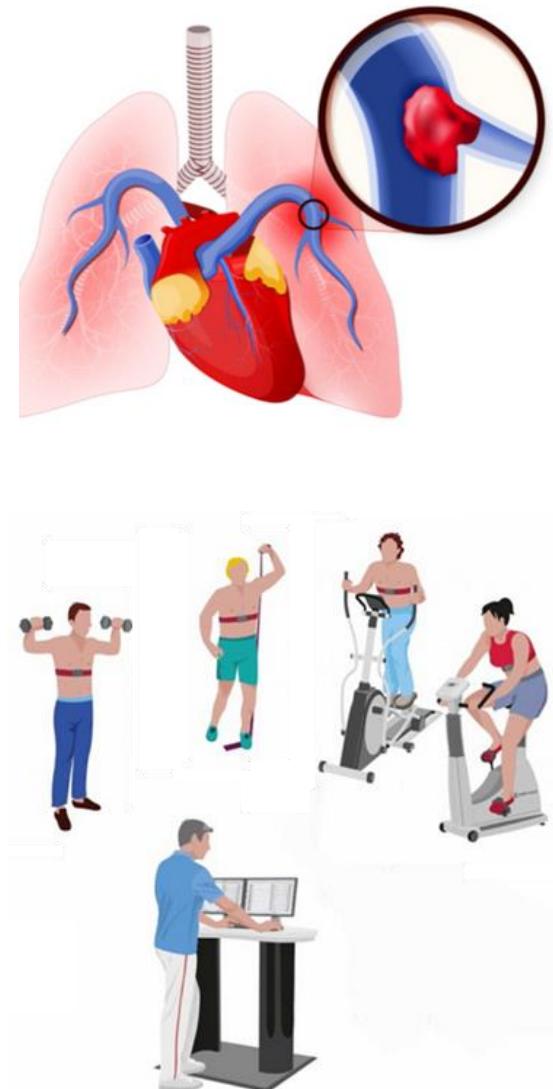


Full Length Article

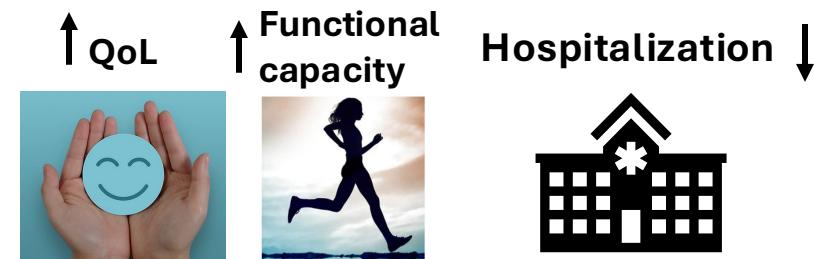
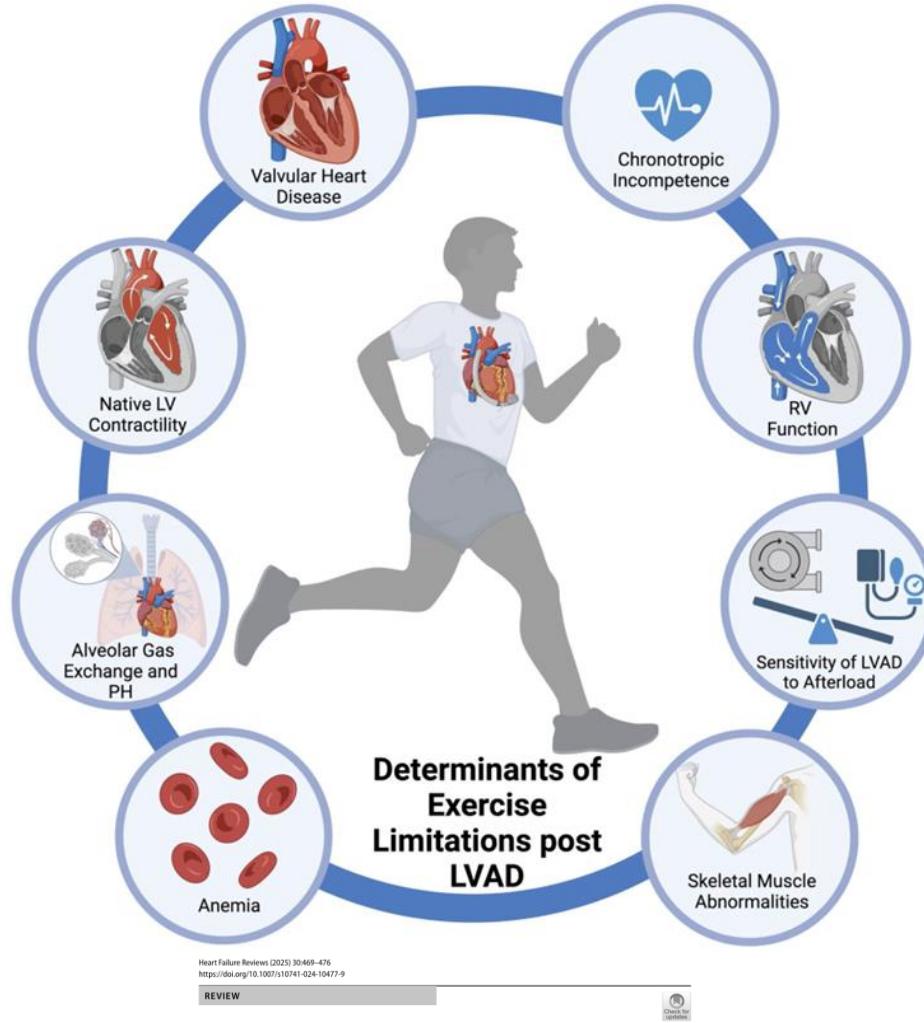
Efficacy and safety of a 12-week outpatient pulmonary rehabilitation program in Post-PE Syndrome



Gudula J.A.M. Boon^a, Steffi M.J. Janssen^b, Stefano Barco^{c,d}, Harm Jan Bogaard^e, Waleed Ghanima^{f,g}, Lucia J.M. Kroft^b, Lilian J. Meijboomⁱ, Maarten K. Ninaber^j, Esther J. Nossent^e, Martijn A. Spruit^{k,l,m}, Petr Symerskyⁿ, Hubert W. Vliegen^o, Anton Vonk Noordegraaf^f, Menno V. Huisman^a, Bob Siegerink^{p,q}, Jannie J. Abbink^b, Frederikus A. Klok^{a,*}



Portatori di Device Avanzati: LVAD

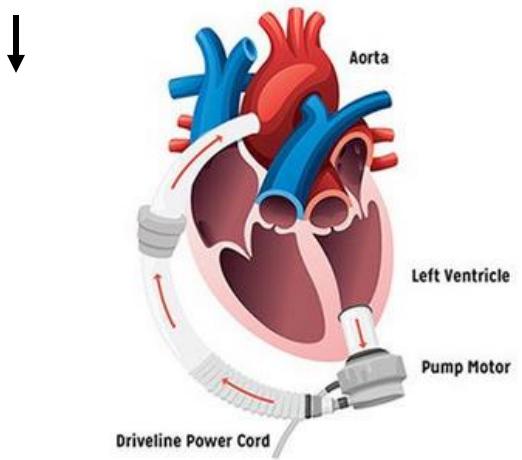
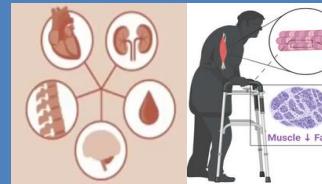


Exercise-based cardiac rehabilitation in patients with left ventricular assist devices: an updated systematic review and meta-analysis of randomized controlled trials

Mohamed Abuelazm, Ahmed A. Ibrahim, Ahmed Mazen Amin, Mahmoud Shaaban Abdelgalil, Ubaid Khan, Hazem Rezq, Hossam Elbenawi, Maha T. Abuelazm, Mustafa Turkmani, Basel Abdelazeem, Christopher Bianco & Sudarshan Balla

Stato Emodinamico

- Condizioni generali**
- Fragilità
 - Sarcopenia
 - Comordilità





Dove realizzare la prescrizione?



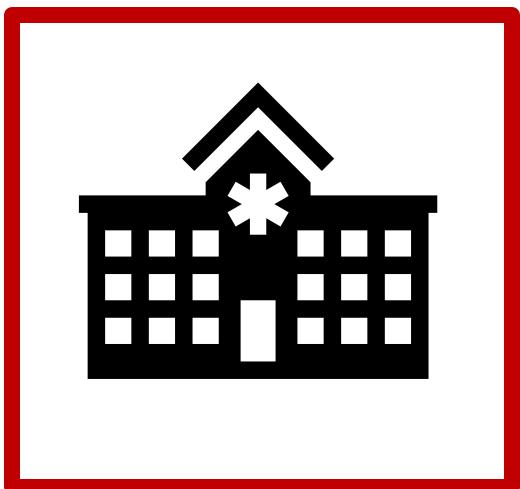


I modelli Riabilitativi

La Cardiologia Preventiva e Riabilitativa “3.0”:
dalle acuzie alla cronicità. Position paper
del Gruppo Italiano di Cardiologia Riabilitativa
e Preventiva (GICR-IACPR)

Roberto F.E. Pedretti¹, Francesco Fattorioli², Raffaele Griffò³, Marco Ambrosetti¹, Elisabetta Angelino⁴,
Silvia Brazzo⁵, Ugo Corrà⁶, Nicolo Dasseni⁷, Pompilio Faggiano⁸, Giuseppe Favretto⁹, Oreste Febò⁹,
Marina Ferrari¹⁰, Francesco Giallauria¹¹, Cesare Greco¹², Manuela Iannucci¹³, Maria Teresa La Rovere¹⁰,
Mario Mallardo¹⁴, Antonio Mazza¹, Massimo Piepoli¹⁵, Carmine Riccio¹⁶, Simonetta Scalfinini¹⁷,
Luigi Tavazzi¹⁸, Pier Luigi Temporelli⁶, Gian Francesco Mureddu¹²

Revisori del Documento
Daniele Bertoli¹⁹, Andrea Bianco²⁰, Pasqualina Calisi²¹, Carlo Ciglia²², Furio Colivicchi²³, Anna Frisinghelli²⁴, Michele Gabriele²⁵,
Giuseppe Ciancamerla²⁶, Rocco Lagioia²⁷, Roberto Marin²⁸, Bruna Miserrafiti²⁹, Salvatore Pirelli³⁰, Matteo Ruzzolini³¹,
Gianpaolo Scorcù³², Franco Tarro Genta³³, Nidal Tourkmani³⁴, Elio Venturini³⁵, Marika Werren³⁶, Gianni Zobbi³⁷



Ospedale



Riabilitazione
Degenziale



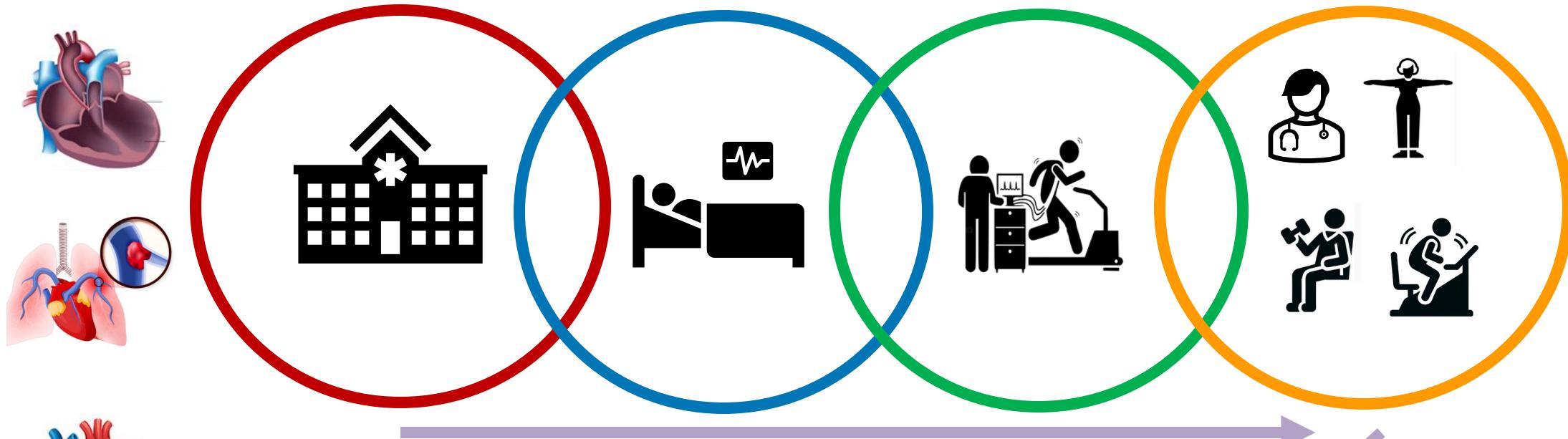
Riabilitazione Ambulatoriale

Strutture di
Riabilitazione
Ambulatoriale



Ambulatori di
Prevenzione
Secondaria

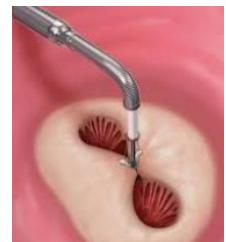
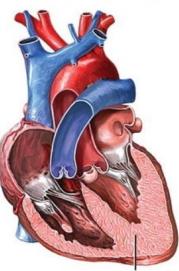
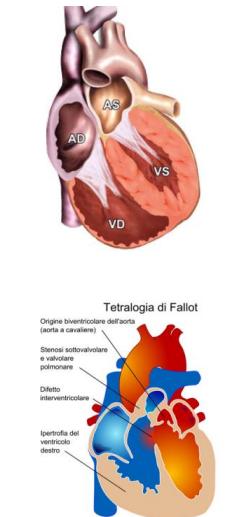
Un continuum



Palestre
(della Salute)



Casa propria
In autonomia





Gli Ambulatori di Prevenzione Secondaria: Un valido intervento riabilitativo mirato

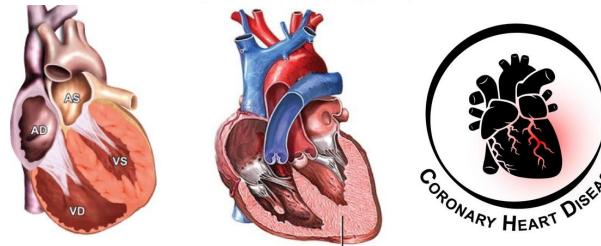
La Cardiologia Preventiva e Riabilitativa “3.0”:
dalle acuzie alla cronicità. Position paper
del Gruppo Italiano di Cardiologia Riabilitativa
e Preventiva (GICR-IACPR)

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Revisori del Documento
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- strutture ambulatoriali a bassa complessità (ambulatori di prevenzione secondaria);
- strutture ambulatoriali in grado di erogare percorsi complessi di CPR [in alcune Regioni ancora inquadrate in un regime di ricovero in ospedalità diurna (day-hospital), in altre in percorsi ambulatoriali integrati come, ad esempio,

Per i pazienti a basso rischio, stabili, l'intervento di CR ambulatoriale essenzialmente focalizzato sugli aspetti preventivi ed educativi, può invece essere erogabile in strutture ambulatoriali a bassa complessità (ambulatori di prevenzione secondaria).



Obiettivi

- stratificazione prognostica e stabilizzazione clinica,
- counseling sull'attività fisica,
- prescrizione di un programma di training fisico personalizzato,
- counseling su dieta e nutrizione,
- gestione del peso corporeo,
- gestione della dislipidemia,
- controllo e gestione della pressione arteriosa,
- interruzione dell'abitudine al fumo,
- intervento psicologico e sociale.



LA PRESCRIZIONE DELL'ESERCIZIO FISICO IN AMBITO CARDIOLOGICO

sicsport
Società Italiana di Cardiologia dello Sport

FMSI
FEDERAZIONE MEDICO
SPORTIVA ITALIANA



TAKE HOME MESSAGE

- Il Cardiopatico “complesso” rappresenta una sfida nell’ambito della prescrizione dell’esercizio fisico ma ne riconosciamo l’indubbia utilità in termini di miglioramento della qualità della vita, della riduzione degli eventi cardiovascolari e della capacità funzionale.
- Abbiamo una forte necessità di aprire le porte delle nostre realtà riabilitative e mettere a disposizione le nostre competenze al servizio delle “nuove” patologie cardiache che hanno una forte domanda di prescrizione dell’esercizio fisico appropriato (*cardiomiopatia ipertrofica, aritmogena ecc.*)
- Per rispondere alla complessità clinica ed organizzativa, è necessario creare davvero nel prossimo futuro il vero “continuum” nella presa in carico: dall’alta complessità (ospedale → riabilitazione degenziale) al territorio (riabilitazione ambulatoriale → ambulatori prevenzione secondaria → palestre della salute e casa)

Prescrivere l’esercizio fisico del cardiopatico complesso significa iniziare un viaggio: il nostro contributo consente che esso prenda la direzione giusta



Grazie per l'attenzione