



FORUM EUROPÉEN, CŒUR, EXERCICE & PRÉVENTION



RÉHABILITATION EN CARDIOLOGIE CONGÉNITALE

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www.forumeuropeen.com



Conflits d'intérêts

AUCUN

The NEW ENGLAND JOURNAL of MEDICINE

REVIEW ARTICLE

Jane A. Leopold, M.D., *Editor*

Cardiac Rehabilitation — Challenges, Advances, and the Road Ahead

Randal J. Thomas, M.D.

Qualifying CVD Event or Diagnosis (inpatient or outpatient setting)

Identify patients who are eligible for CR
Initiate secondary CVD prevention therapies
Refer to outpatient CR program
Assist with prompt CR enrollment

CR Components

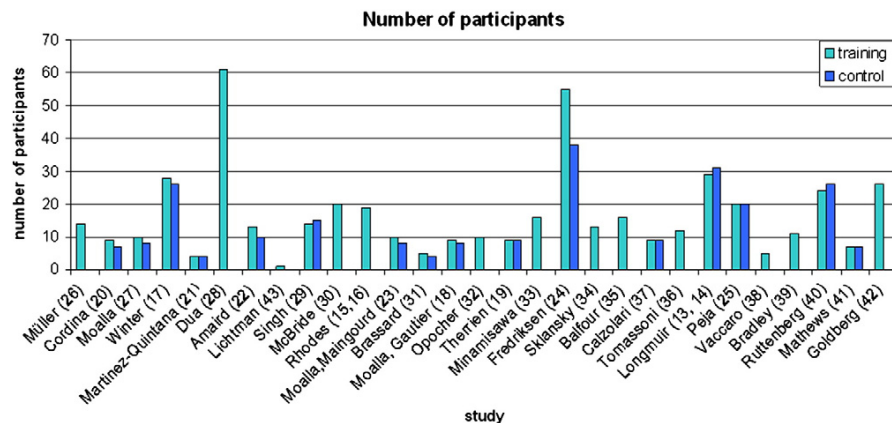
Attention to coexisting conditions
Risk factor control
Psychological support
Nutrition therapy
Physical activity
Patient assessment and monitoring

Long-Term Follow-up

Assess need for CVD risk reduction
Provide updated treatment plan
Encourage long-term maintenance
Connect with long-term care provider

Figure 1. Cardiac Rehabilitation (CR) Pathway.

Important factors are listed for the three parts of the CR pathway, including steps to help patients initiate CR, components of an effective CR program, and steps to help patients maintain progress over time. CVD denotes cardiovascular disease.

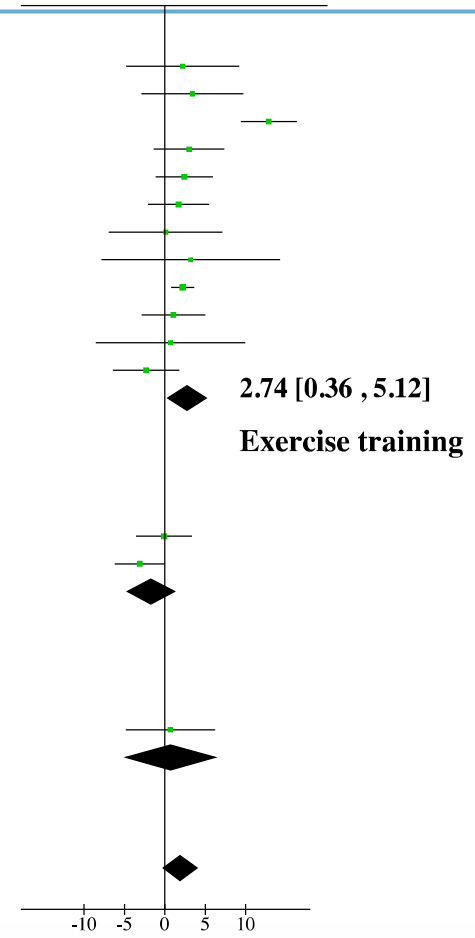


Physical activity interventions for people with congenital heart disease (Review)

Williams CA, Wadey C, Pieles G, Stuart G, Taylor RS, Long L

Cochrane Database Syst Rev. 2020

- 15 RCT (5 E , 10 A) : 924 patients
- 3 types d'intervention
- faible amélioration sur la capacité physique
- Évaluation au décours du programme
- réhabilitation plus que promotion
- peu significatif sur QLV
- pas de complications



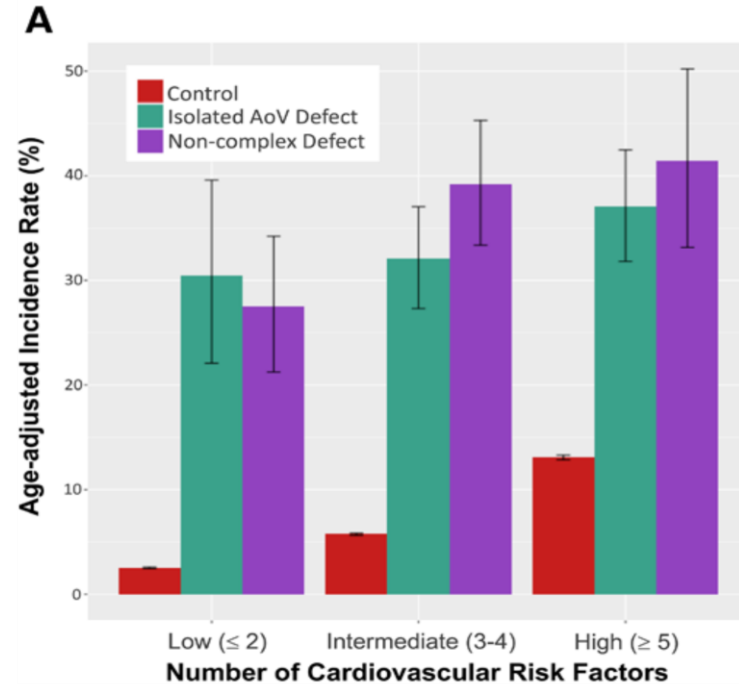
Circulation

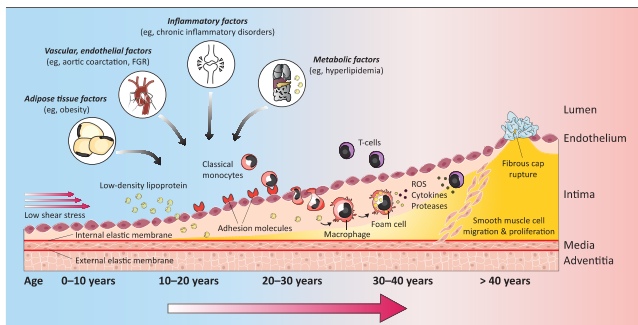
ORIGINAL RESEARCH ARTICLE



Substantial Cardiovascular Morbidity in Adults With Lower-Complexity Congenital Heart Disease

- ACHD: 51% tabagisme, 30% obésité, 69% hypertension, 41%,hyperlipidemie, 7% diabetes
- Risque de syndrome coronarien aigu x 2.0 (95% CI, 1.5–2.8; $P<0.001$)
- Risque d'insuffisance cardiaque x 13.0 (95% CI, 9.4–18.1; $P<0.001$)





Atherosclerotic Cardiovascular Risk as an Emerging Priority in Pediatrics.

Schipper HS, de Ferranti S. *Pediatrics*. 2022

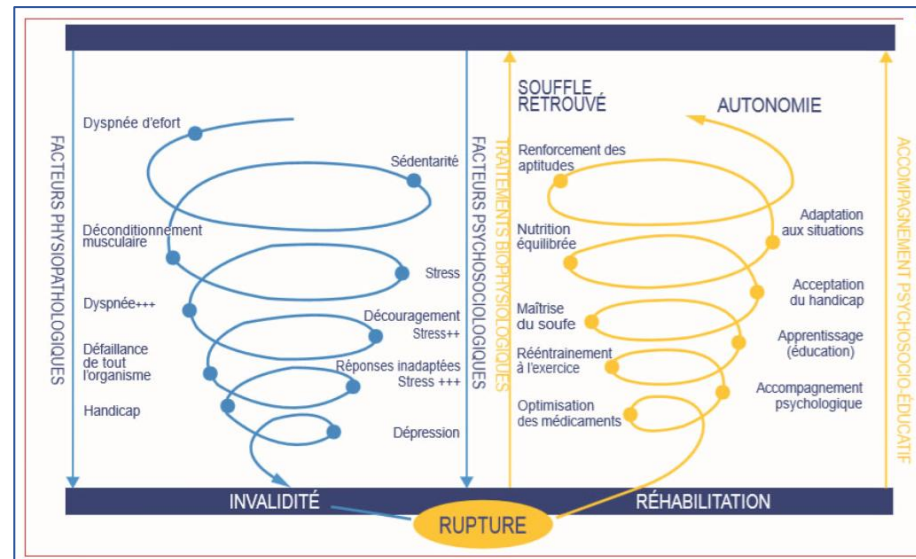
Table 3. Risks of CVD by Type of Congenital HD

	Coronary Artery Disease	Cerebrovascular Disease	Peripheral Vascular Disease
Repaired ASD/VSD	Not known to have increased risk	Increased risk if residual shunt	Not known to have increased risk
Bicuspid aortic valve	Potential risk after Ross procedure with reimplantation of coronary arteries	Not known to have increased risk	Increased risk related to aortic aneurysm
Coarctation of aorta	Increased risk could be related to accelerated atherosclerosis vs late hypertension	Increased risk related to residual hypertension or intracranial aneurysms	Increased risk related to residual coarctation or aortic aneurysm
Ebstein anomaly	Not known to have increased risk	Increased risk if interatrial shunt	Not known to have increased risk
Tetralogy of Fallot	Increased risk could be related to coronary anomalies	Increased risk if residual intracardiac shunt	Increased risk related to aortic dilation
TGA atrial switch	Increased risk could be related to coronary anomalies	Increased risk if residual baffle leak	Increased risk could be related to prior catheterizations
TGA arterial switch	Increased risk related to reduced coronary flow reserve, proximal intimal thickening, and coronary anomalies	Not known to have increased risk	Increased risk related to neo-aortic dilation
Fontan	Increased risk could be related to coronary anomalies	Increased risk if Fontan fenestration	Increased risk related to Fontan venous pressures and prior catheterizations
Cyanotic congenital HD	Potential decreased risk	Increased risk related to secondary erythrocytosis and hyperviscosity syndrome	Increased risk related to secondary erythrocytosis and hyperviscosity syndrome
Eisenmenger syndrome	Potential decreased risk	Increased risk related to secondary erythrocytosis and hyperviscosity syndrome	Increased risk related to secondary erythrocytosis and hyperviscosity syndrome

Cardiovascular Risk Reduction in High-Risk Pediatric Patients: A Scientific Statement From the American Heart Association. de Ferranti SD & al. *Circulation*. 2019

FACTEURS ASSOCIES A L' HYPO-ACTIVITE PHYSIQUE

- Altération de l'aptitude physique aérobie¹
- Altération de la fonction musculaire ²
- Manque d'autonomie, faible sentiment d'efficacité personnelle ³
- Surprotection parentale ⁴
- Principe de précaution appliqué par les médecins⁵



¹ Kempny et al. 2012, Amedro & al. 2017

² Kröönström et al. 2014

³ Chen et al. Eur. 2015

⁴ Reybrouck et al. 2005

⁵ Swan et al. 2000

FACTEURS LIMITANT ET MOTIVANT L'ACTIVITE PHYSIQUE

ENABLERS

Being supported by others

ENCOURAGEMENT

*Having improved fitness
Using medical treatment
Feeling vital*

ENERGY LEVEL

*Having positive attitude
Having driving force
Being self-confident*

APPROACH

*Using technical aids
Having structure*

ENVIRONMENT

BARRIERS

Lacking support from others

Famille, conjoint,
pairs, modèles

*Being restricted by heart defect
Having comorbidity
Feeling lethargic*

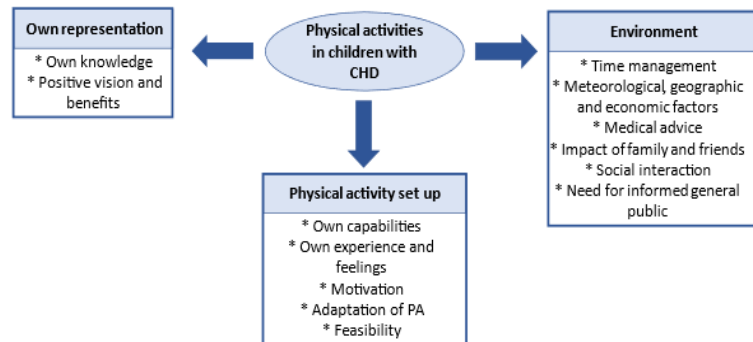
Capacité aérobie,
muscles,
articulations

*Having fear of movement
Lacking driving force
Lacking self-confidence*

Kick
d'endorphine,
distraction

*Limited by physical environment
Lacking structure*

Agenda, climat



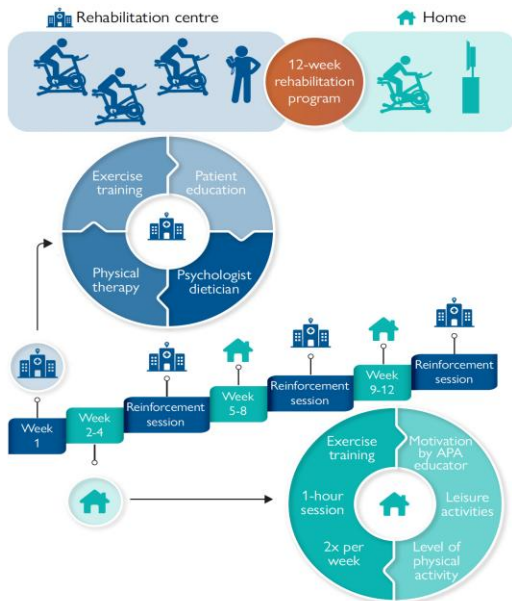
Bay et al. *Eur J Cardiovasc Nurs.* 2020, Pons C & al. 2021, Mora & al. 2019, Nazare & al. 2017, Majenemer & al. 2019

The QUALIREHAB trial

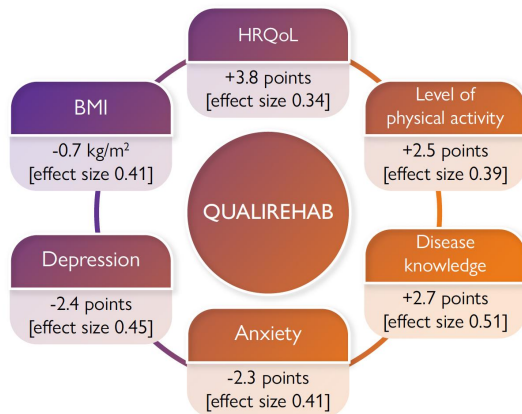
Main inclusion criteria

- 13-25 year old CHD patients
- $VO_{2max} < 80\%$ and /or VAT < 55%

12-month follow-up



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



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



European Society of Cardiology
European 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

Pascal Amedro^{1,2*}, Arthur Gavotto^{3,4}, Helena Huguet⁵, Luc Souilla⁶, Anne-Cecile Huby^{1,2}, Stefan Matecki⁶, Anne Cadene⁵, Gregoire De La Villeon^{3,6}, Marie Vincenti^{3,4,6}, Oscar Werner^{3,6}, Charlene Bredy^{3,7}, Kathleen Lavastre³, Hamouda Abassi^{3,4}, Sarah Cohen⁸, Sebastien Hascoet⁸, Claire Dauphin⁹, Aurelie Chalard⁹, Yves Dulac¹⁰, Nathalie Souletie¹⁰, Helene Bouvaist¹¹, Stephanie Douchin¹¹, Matthias Lachaud¹¹, Caroline Ovaert¹², Camille Soulatges¹², Nicolas Combes¹³, Jean-Benoit Thambo^{1,2}, Xavier Iriart¹, Fanny Bajolle¹⁴, Damien Bonnet¹⁴, Helene Ansquer¹⁵, Jean-Guillaume Delpy¹⁵, Laurence Cohen¹⁶, Marie-Christine Picot^{5,17}, and Sophie Guillaumont^{3,6}; the QUALIREHAB Study Group

QUALIREHAB : points déterminants

 Rehabilitation centre

 Home



Critères de jugement

Inclusion

Intervention

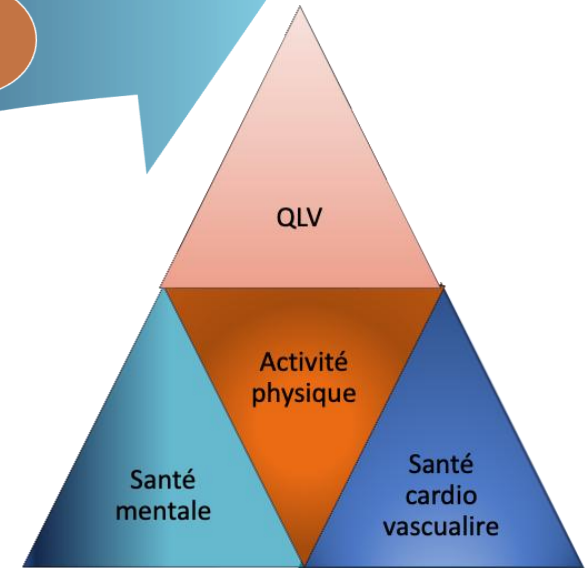
Main inclusion criteria



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12-month follow-up



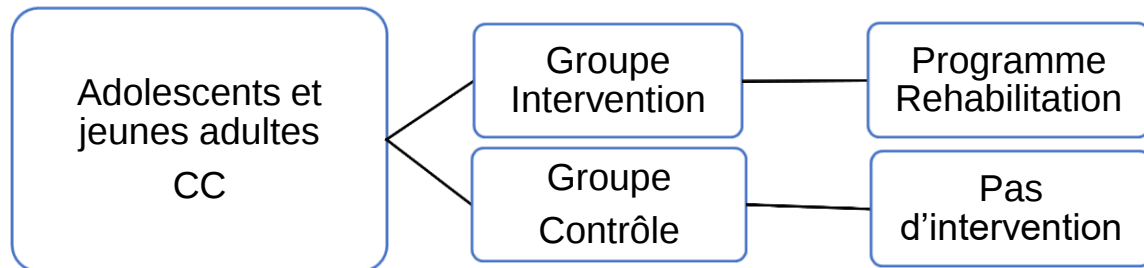
QUALIREHAB: conception

M0 Inclusion

Randomisation

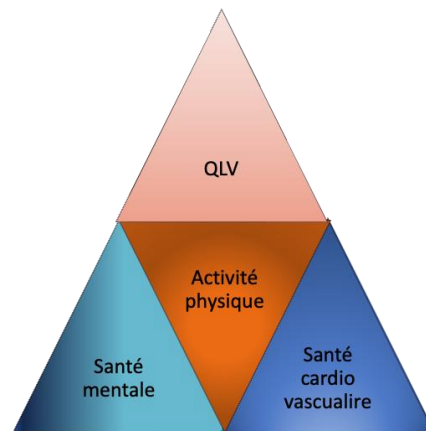
Intervention

M12 Critères de jugement

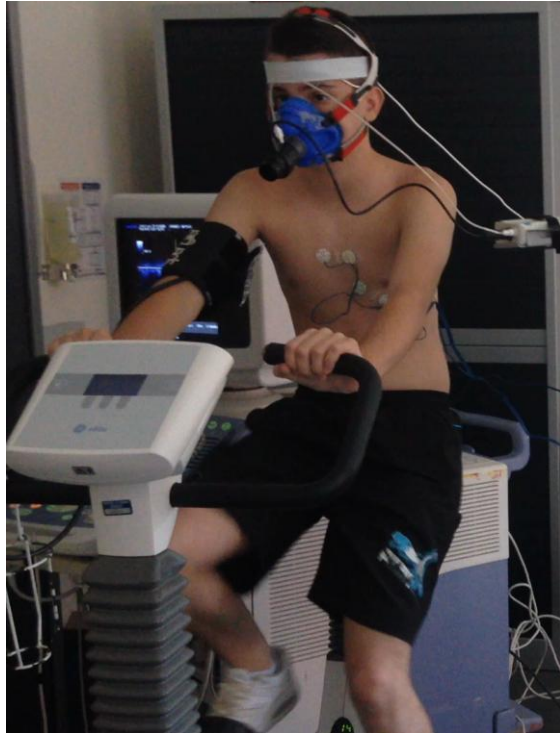


RCT multicentrique

- 12 centres d'inclusion, 9 centres de réadaptation
- Promoteur CHU Montpellier, PHRIC,
- Investigateur coordinateur: Sophie Guillaumont
- Responsable scientifique: Pascal Amedro



QUALIREHAB : inclusion et critères de jugement



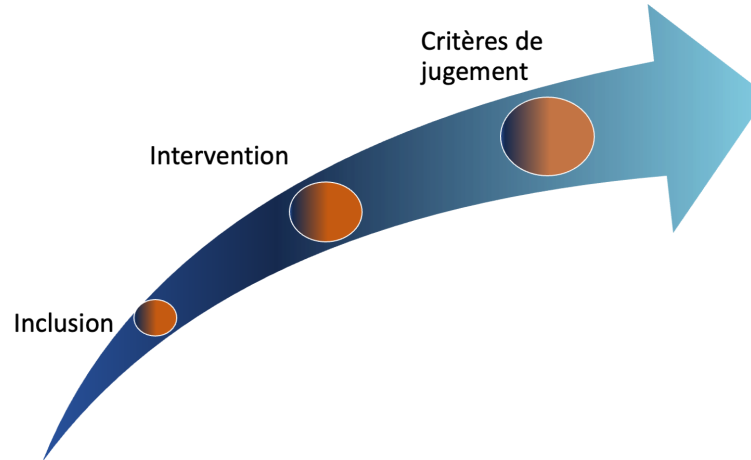
Main inclusion criteria



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follow-up



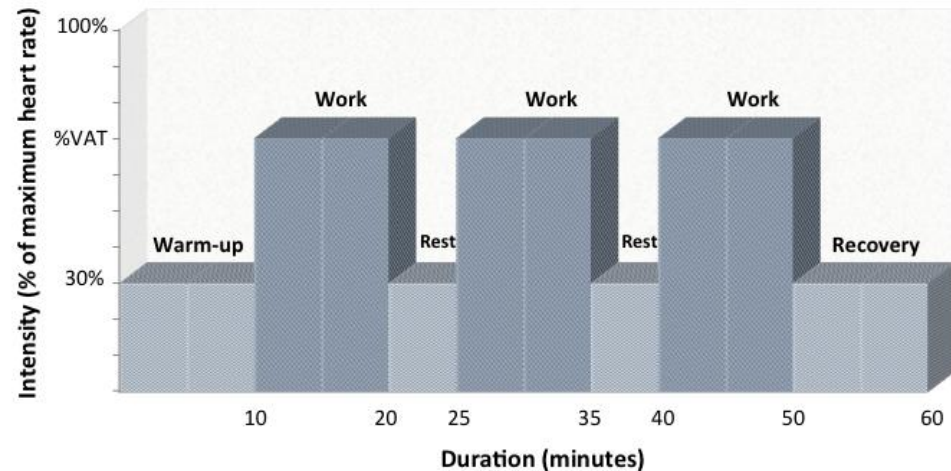
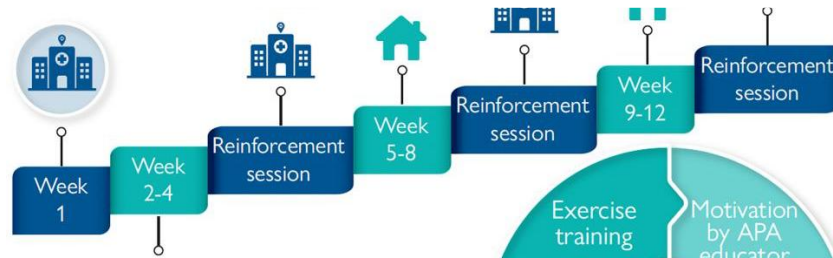
QUALIREHAB : intervention



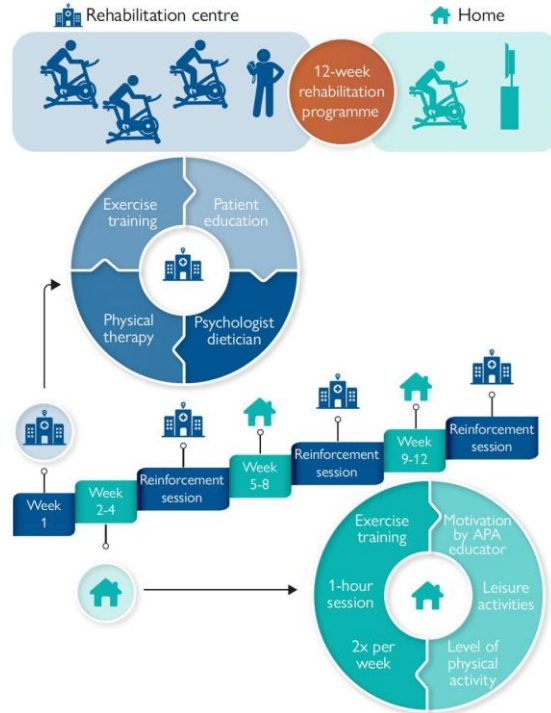
Lessons from the TRANSITION-CHD randomized controlled trial



QUALIREHAB : intervention



QUALIREHAB : intervention



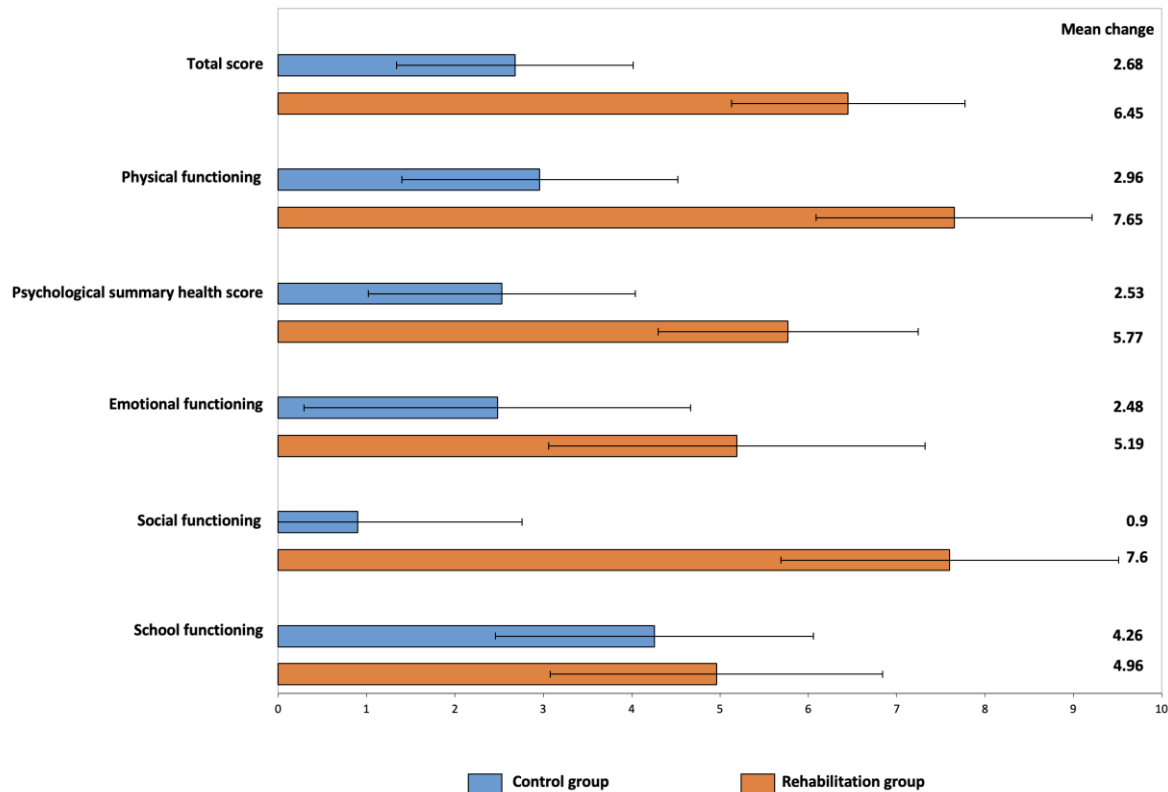
QUALIREHAB essai randomisé contrôlé multicentrique

- **NSN :**

142 patients inclus
(âge moyen 17,4 +/- 3,4)

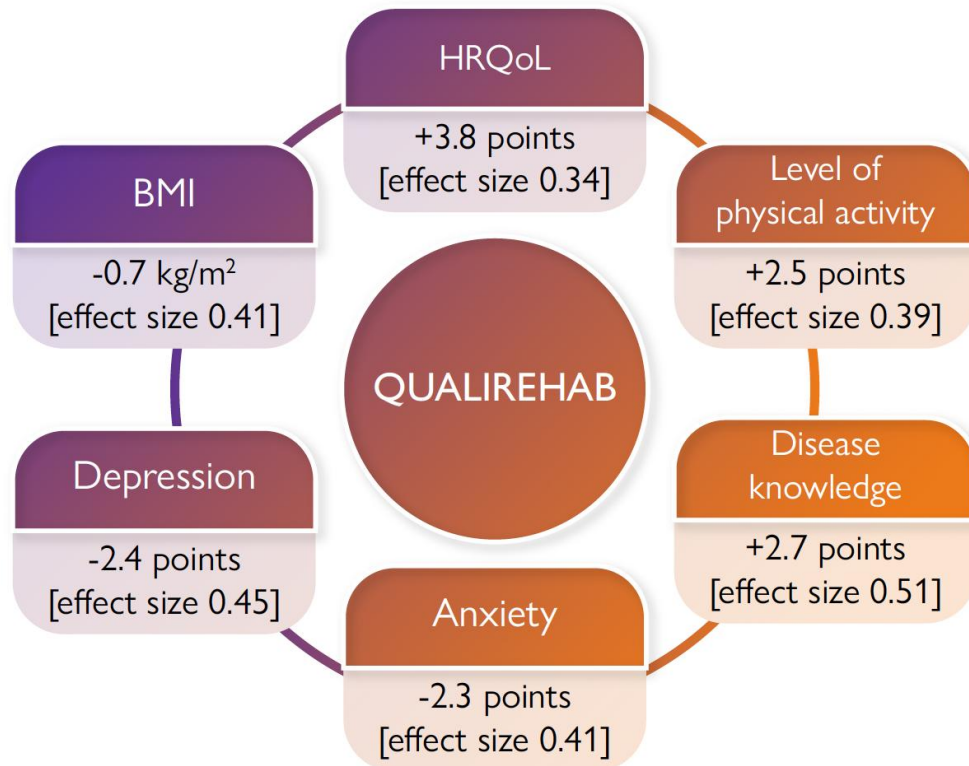
- **CJP**

- Modification positive du score total du PEDS^{QL} à 12 mois
- Différence moyenne: 3.8
(95%CI=[0.2;7.3]; P=0.038,
effect size=0.34)



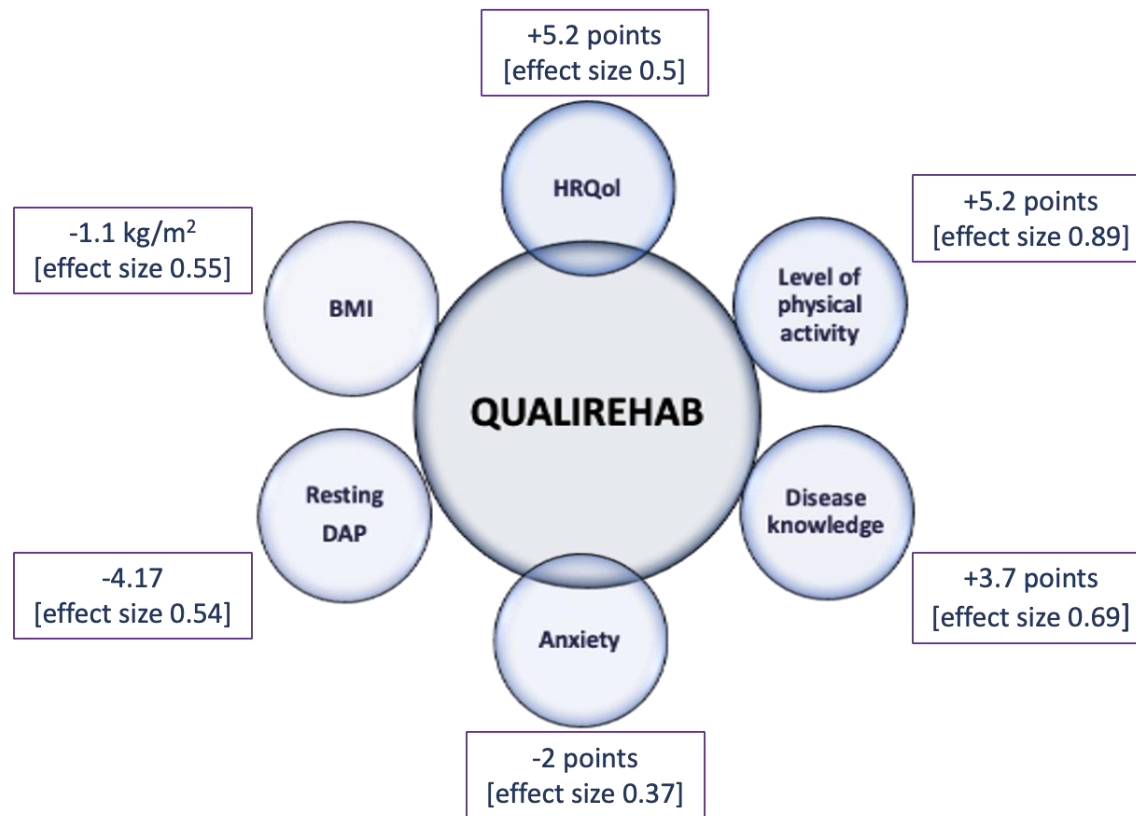
QUALIREHAB essai randomisé contrôlé multicentrique

En ITT



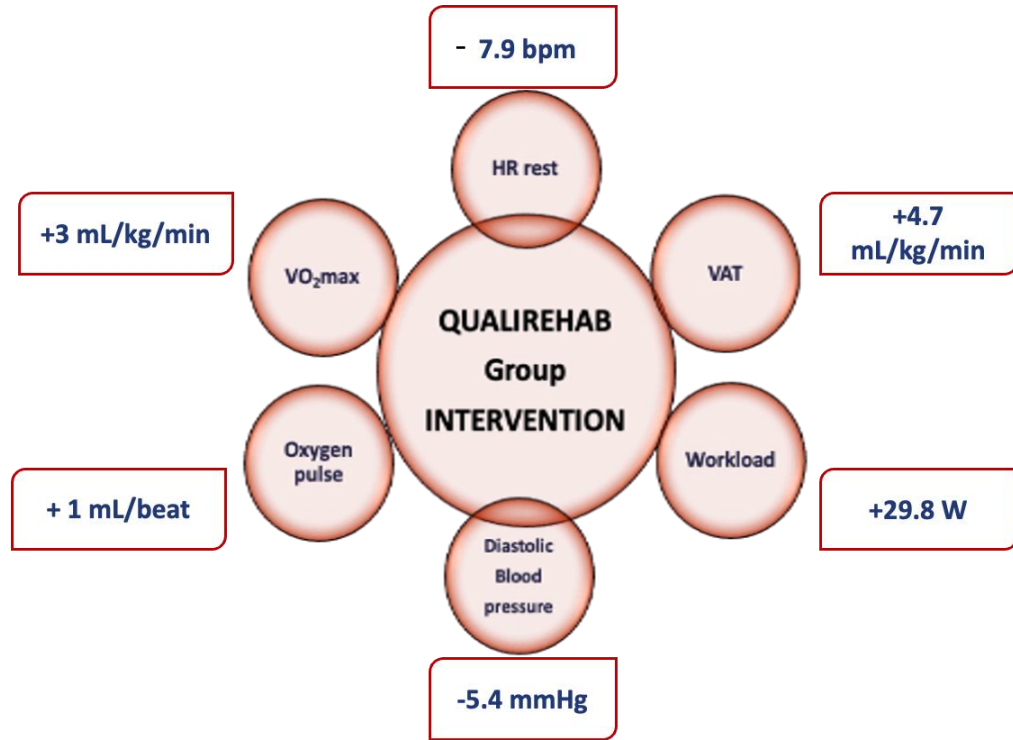
QUALIREHAB essai randomisé contrôlé multicentrique

En per protocole



QUALIREHAB essai randomisé contrôlé multicentrique

- Résultats positifs sur la $VO_{2\max}$ à court terme
- Efficacité d'un programme hybride de 12 semaines



QUALIREHAB essai randomisé contrôlé multicentrique

Acceptabilité et Innocuité de l'intervention

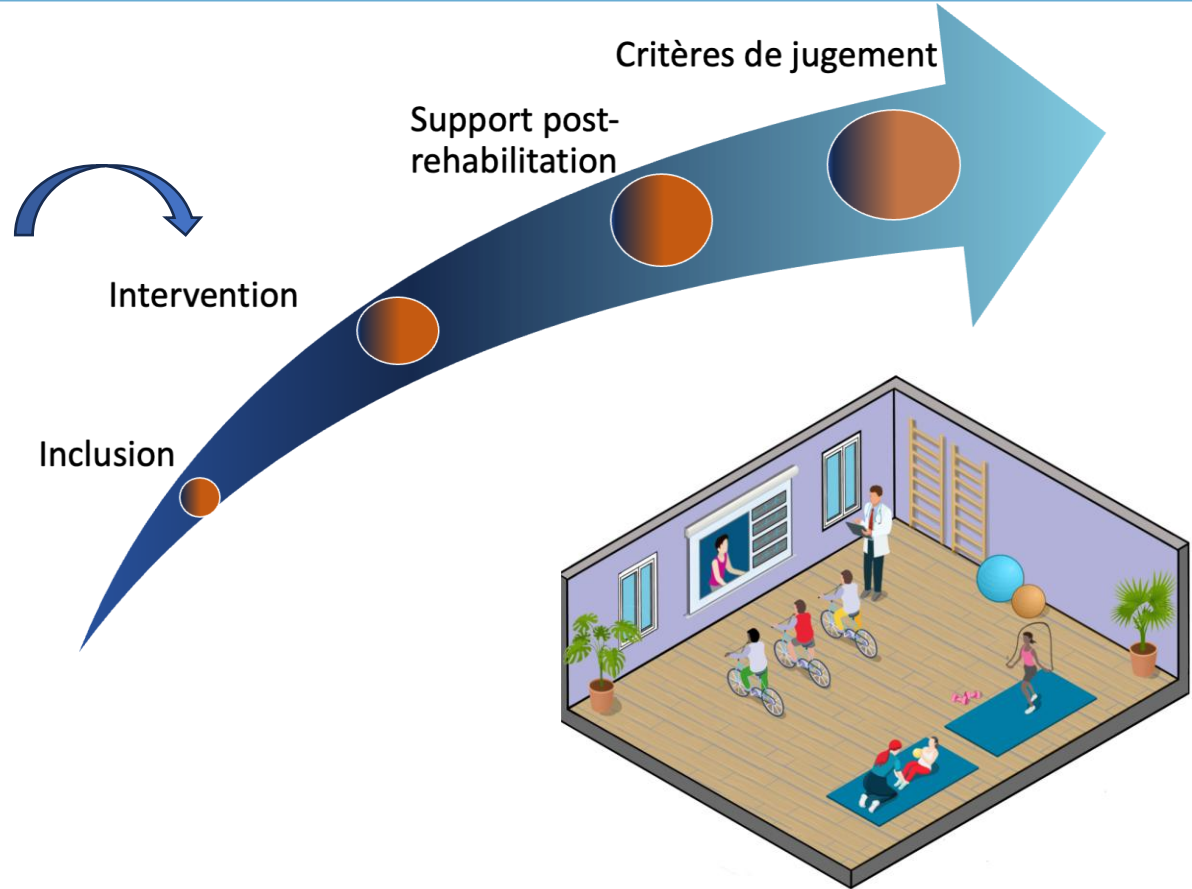


Réalisation de plus de 80% des sessions pour 81% des patients

Taux de participation satisfaisant : 1ère semaine en centre (91%), séances à domicile (88%), and sessions de rappel en centre (77%).

Pas d'effet indésirable lié au programme de réhabilitation

QUALIREHAB : perspectives et pistes d'amélioration



QUALIREHAB : perspectives

Plateforme
digitale

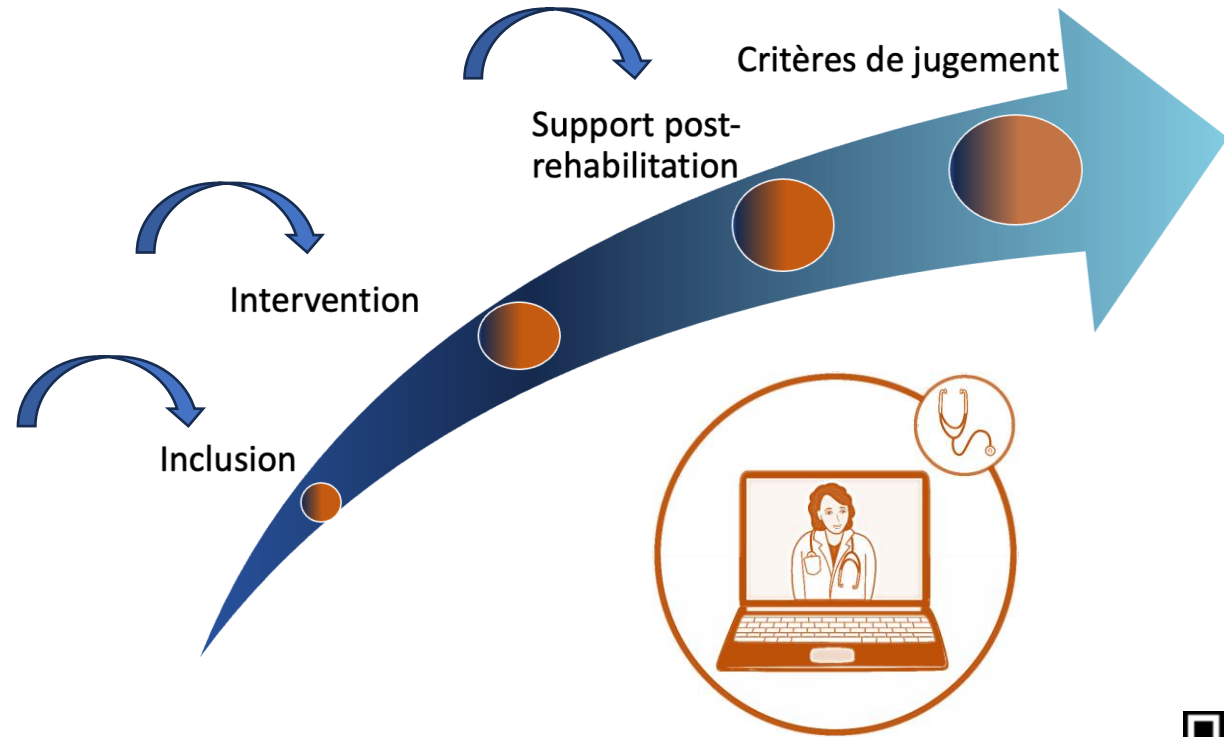
Anamnèse
Anticiper . Accompagner . Accélérer



Médana
Conçu par Anamnèse

Bienvenue

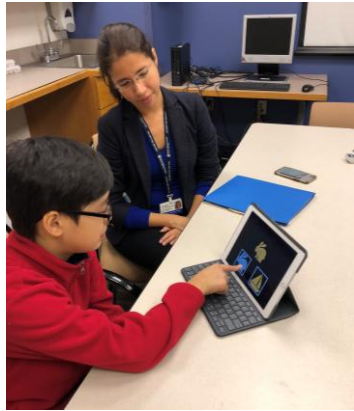
Connectez-vous pour
accéder à votre
application
QualiNeuroRehab.



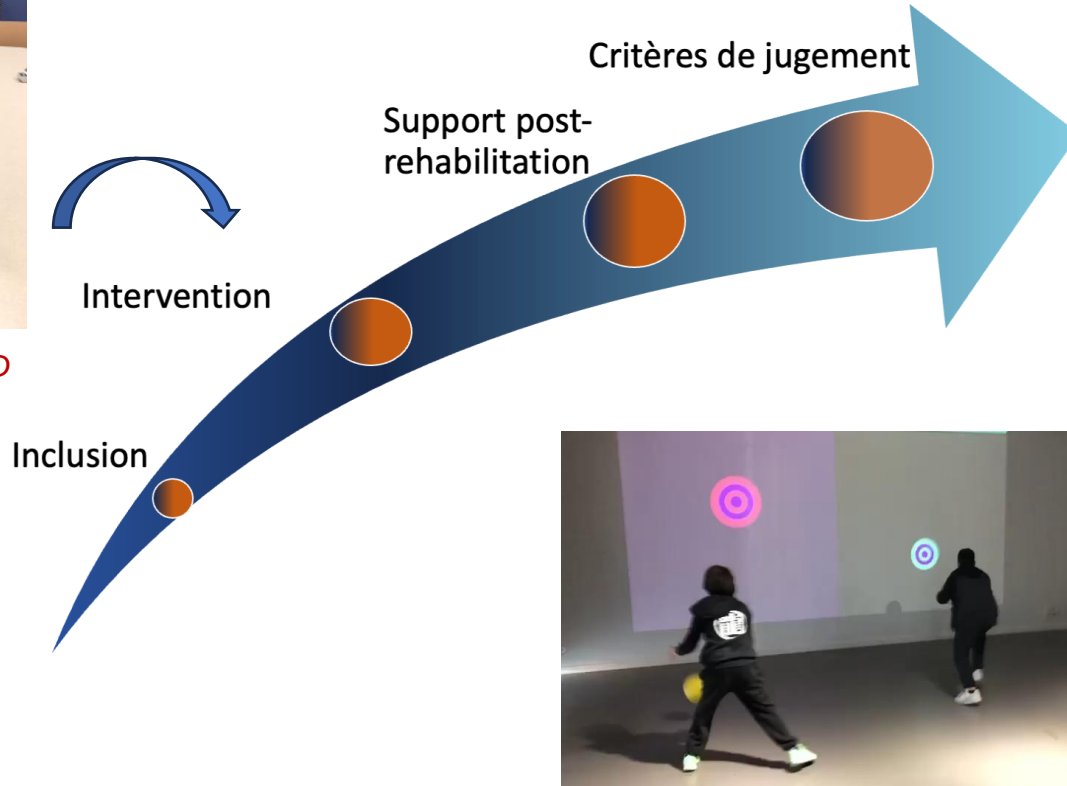
www.forumeuropeen.com



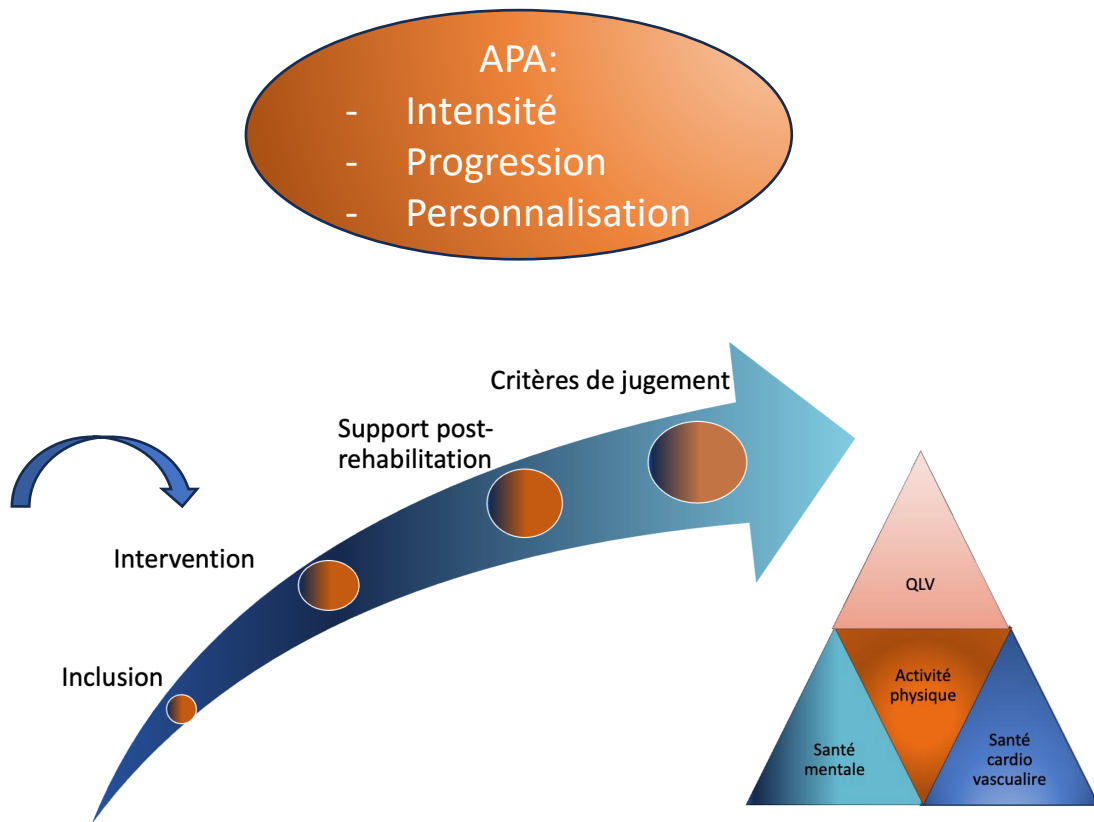
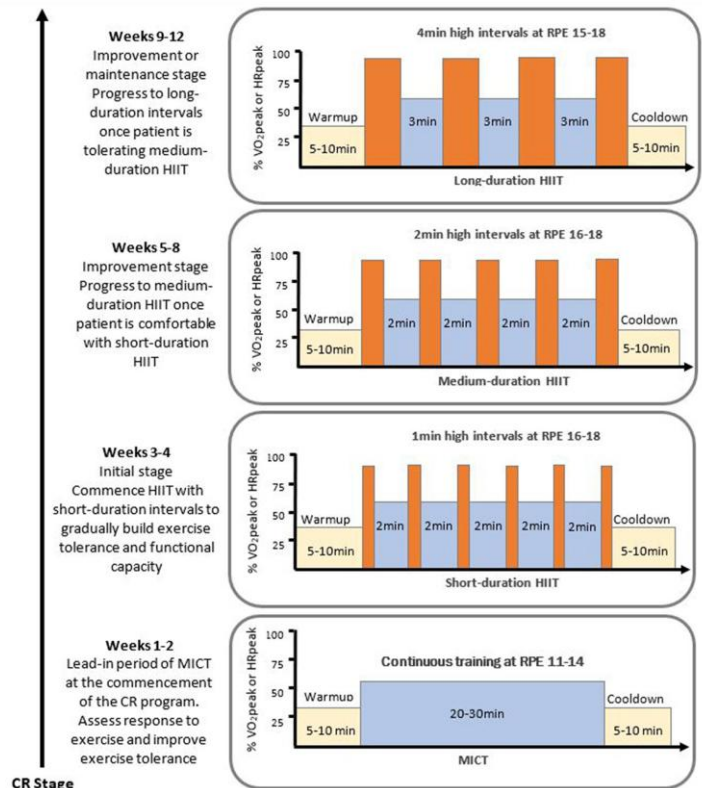
QUALIREHAB : perspectives



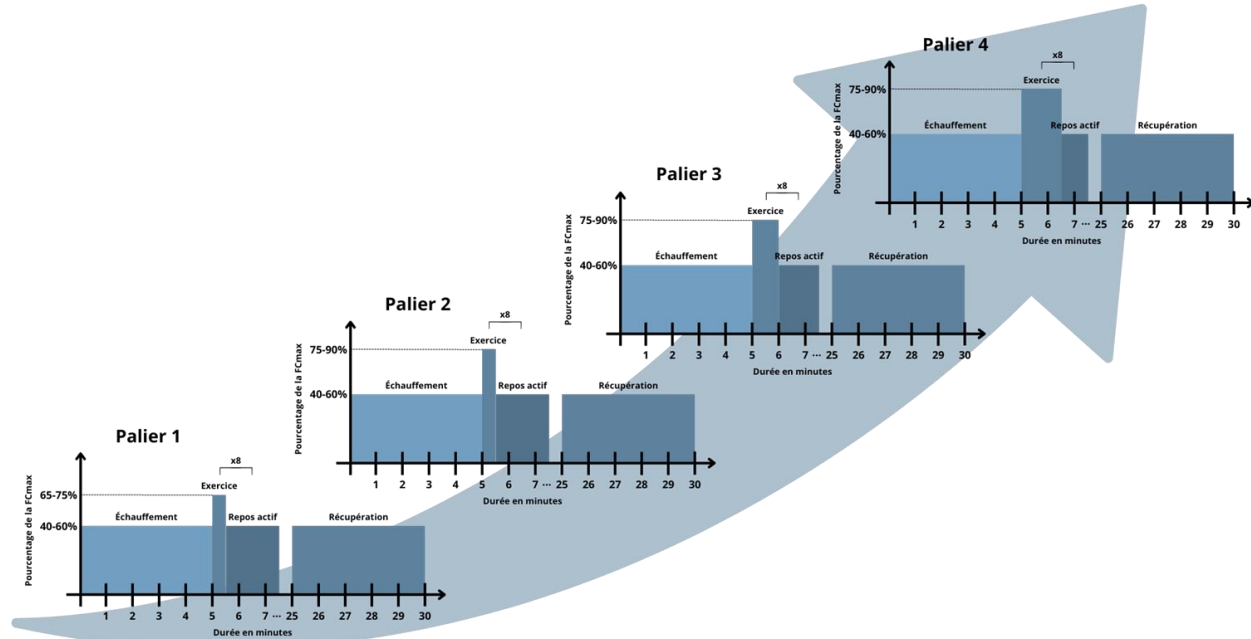
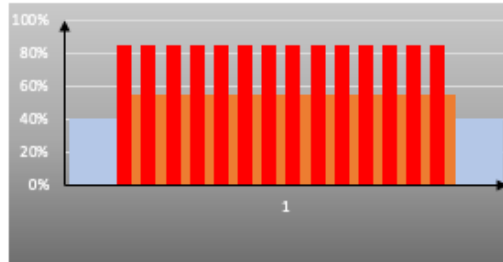
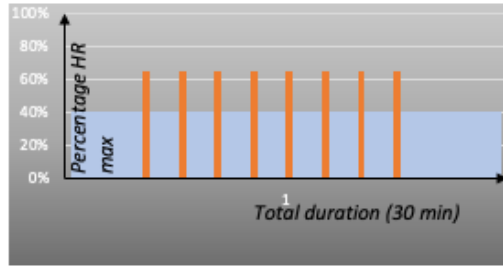
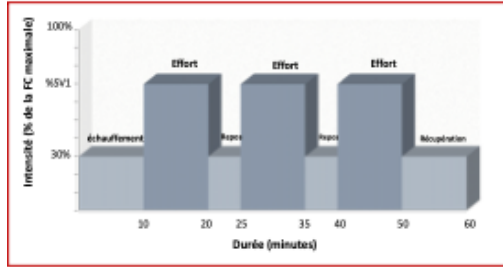
Johanna Calderon PhD



QUALIREHAB : perspectives



QUALIREHAB : perspectives



QUALI-NEUROREHAB



EXERCISE TRAINING

HIIT, cycle-ergometer + free physical activity (2 h per week, in presence and videoconference)



NEURO-PSYCHOLOGICAL FEEDBACK

½ hour session per week with neuropsychologist



PATIENT EDUCATION

Teleconsultation with nurse + digital content

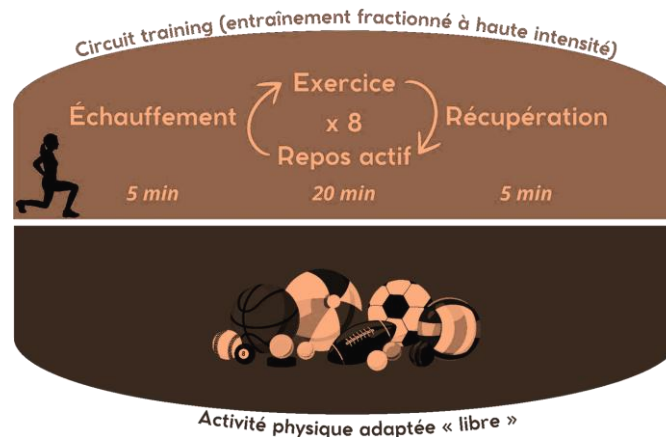
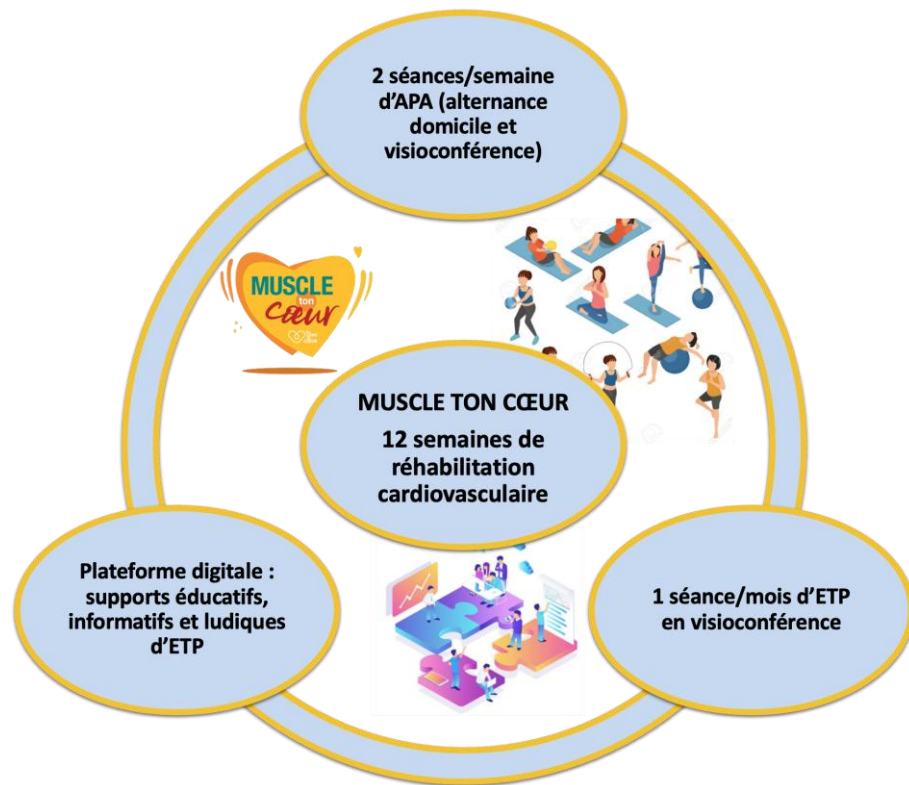


DIGITAL PLATFORM

COGNITIVE TRAINING (COGMED)

½ hour individual session twice a week

www.forumeuropeen.com



Mathieu Andrianoely

Enseignant en APA / Doctorant

Pathologies chroniques: QUALIREHAB-ONCO



Pediatric
RESEARCH



CLINICAL RESEARCH ARTICLE

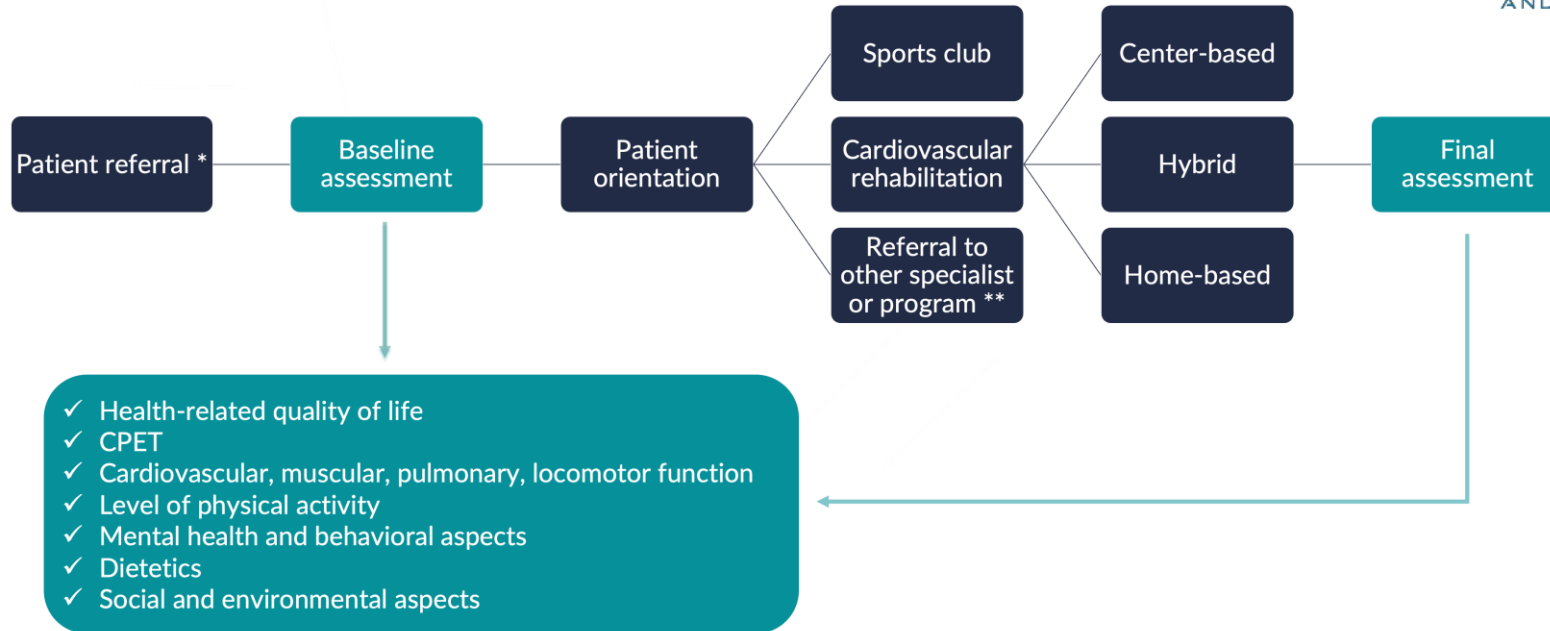
Impaired aerobic capacity in adolescents and young adults after treatment for cancer or non-malignant haematological disease

Arthur Gavotto^{1,2}, Vincent Dubard¹, Martina Avesani³, Helena Huguet⁴, Marie-Christine Picot⁴, Hamouda Abassi¹, Sophie Guillaumont^{1,5}, Gregoire De La Villeon^{1,5}, Stephanie Haouy⁶, Nicolas Sirvent⁶, Anne Sirvent⁶, Alexandr⁶ Theron⁶, Anne Requirand¹, Stefan Matecki^{1,2} and Pascal Amedro^{3,7,8}

Check for updates



QUALIREHAB: parcours patient



* By specialist physician, family doctor, nurse practitioner, etc.

**Dietician, psychologist, neuropsychologist, psychiatrist, physiatrist, social worker, other subspecialists, etc.

Doctors should be able to prescribe exercise like a drug

Few think that brief advice can change behaviour

Exercise is medicine: a call to action for physicians to assess and prescribe exercise

