La réadapation cardiovasculaire en mode virtuel

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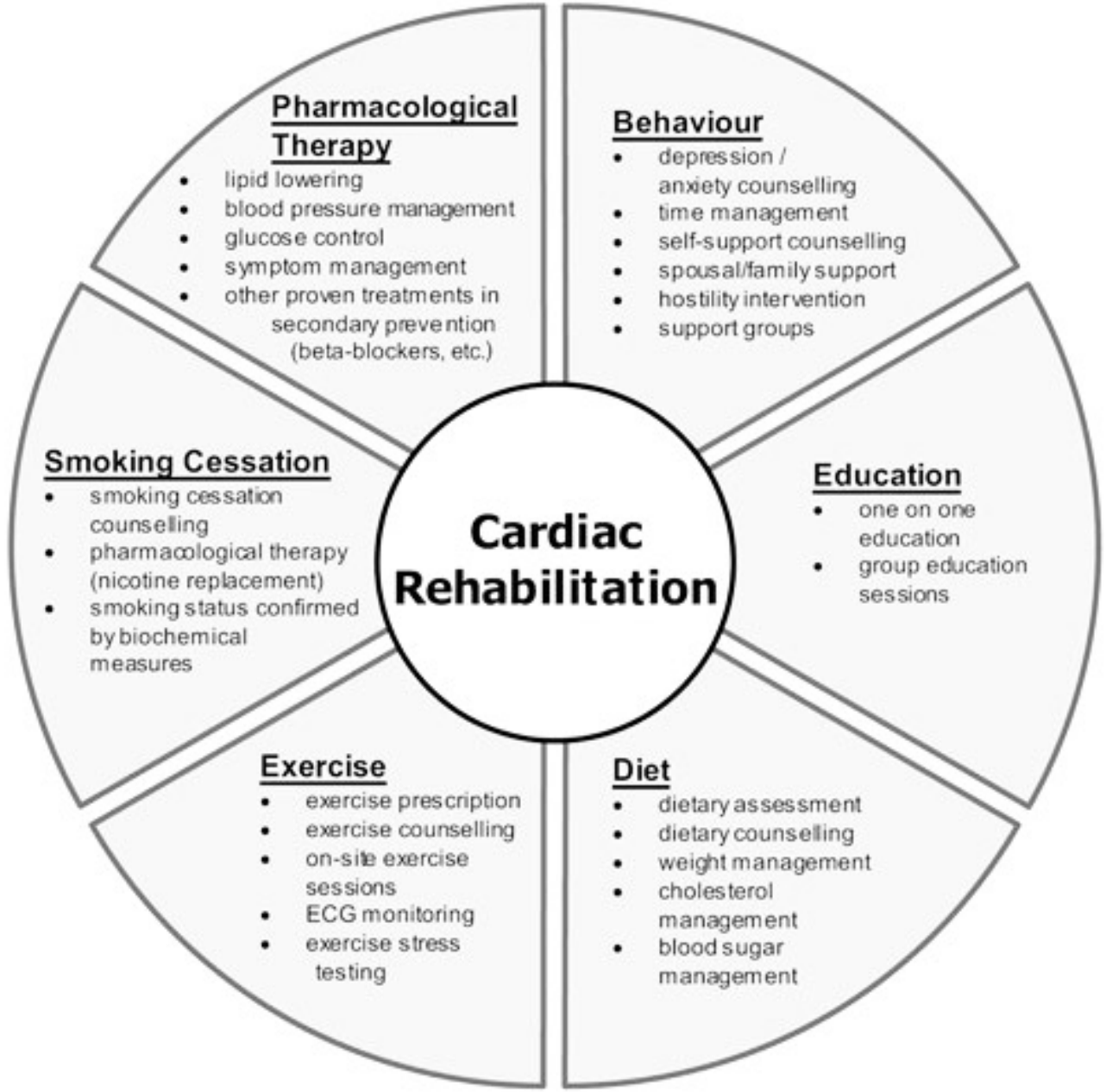
Directrice médicale du programme PREV

Conflit d’intérêt

- Aucun

Objectifs

- Revoir les évidences en matière de réadaptation cardiaque virtuelle
- Identifier la clientèle cible et connaitre les contre-indications à l'entrainement virtuel
- Découvrir les outils pour faciliter la transition vers un mode virtuel



Current Controlled Trials in Cardiovascular Medicine

TRANSACTIONS. 59

VI. *Some Account of a Diſorder of the Breaſt. By* WILLIAM HEBERDEN, *M. D. F. R. S.*

Read at the COLLEGE, JULY 21, 1768.

THERE is a diſorder of the breaſt, marked with ſtrong and peculiar ſymptoms, conſiderable for the kind of danger belonging to it, and not extremely rare, of which I do not recollect any mention among medical authors. The ſeat of it, and ſenſe of ſtrangling and anxiety with which it is attended, may make it not improperly be called Angina pectoris.

THOSE, who are afflicted with it, are ſeized, while they are walking, and more particularly when they walk ſoon after eating, with a painful and moſt diſagreeable ſenſation in the breaſt, which ſeems as if it would

1772

30 min/jour d'exercice: une première cure pour l'angine?

"I knew of one who set himself the task of sawing wood for half an hour every day, and was nearly cured"

Exercise-Based Rehabilitation for Patients with Coronary Heart Disease: Systematic Review and Meta-analysis of Randomized Controlled Trials

Rod S. Taylor, MSc, PhD, Allan Brown, MBA, MA, Shah Ebrahim, DM, MSc, Judith Jolliffe, MSc, Hussein Noorani, MSc, Karen Rees, MSc, PhD, Becky Skidmore, MLS, James A. Stone, PhD, David R. Thompson, PhD, Neil Oldridge, PhD

Am J Med. 2004;116:682–692.

- Méta-analyse de 48 études randomisées
  - Total de 8 940 patients

- ↓ mortalité de toutes causes de 20%
- ↓ mortalité cardiaque de 26%

  - * pas de différence entre les taux d'infarctus non fataux et des procédures de revascularisation

Annals of Internal Medicine | Review

Meta-Analysis: Secondary Prevention Programs for Patients with Coronary Artery Disease

Alexander M. Clark, PhD, BA, RN; Lisa Hartling, MSc; Ben Vandermeer, BSc, MSc; and Finlay A. McAlister, MD, MSc

- Méta-analyse de 63 études randomisées
  - Total de 21 295 patients

- ↓ de 47% de la mortalité toutes causes à 2 ans
- ↓ de 17% des récidives d'infarctus à 1 an

Qu’est-ce que la réadaptation virtuelle?

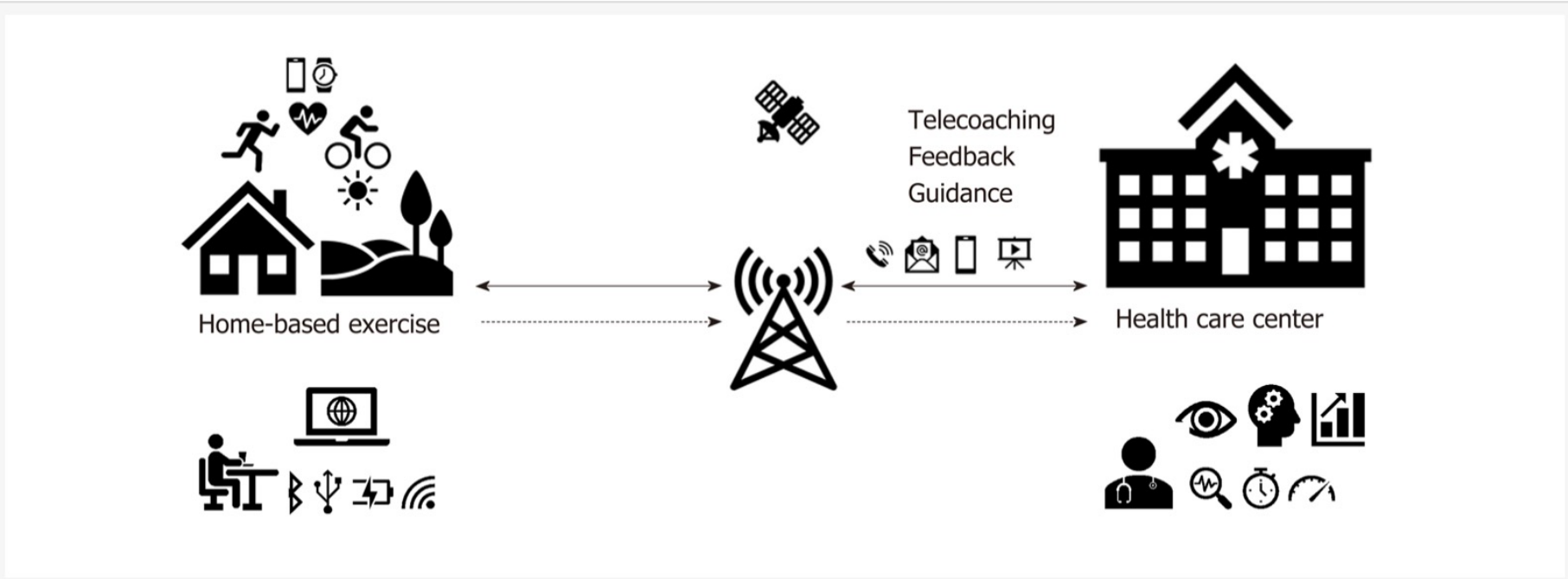


Figure 2 Scheme of remotely monitored telerehabilitation. The diagram shows remotely monitored home-based exercises from the health care center through telemonitoring and telecoaching. Images and icons are depicted as telerehabilitation form using telemedicine technologies.

World J Clin Cases. May 26, 2020; 8(10): 1818-1831

Efficacité

Telehealth exercise-based cardiac rehabilitation: a systematic review and meta-analysis

Jonathan C Rawstorn,[1,2] Nicholas Gant,[2] Artur Direito,[1] Christina Beckmann,[3] Ralph Maddison[1]

Rawstorn JC, *et al*. *Heart* 2016;**102**:1183–1192

Study or Subgroup	TexCR Mean [ml·kg·min]	TexCR SD [ml·kg·min]	TexCR Total	Control Mean [ml·kg·min]	Control SD [ml·kg·min]	Control Total	Weight	Mean Difference IV, Random, 95% CI [ml·kg·min]
1.1.1 TexCR vs CB exCR								
Arthur 2002	18.27	7.35	113	18.24	7	109	19.1%	0.03 [-1.86, 1.92]
Frederix 2013a	28	6	32	23	6	34	15.0%	5.00 [2.10, 7.90]
Gordon 2002	0.9	1.9	49	1.6	2.1	44	23.0%	-0.70 [-1.52, 0.12]
Kraal 2014	26	5.9	25	26.1	7.6	25	11.9%	-0.10 [-3.87, 3.67]
Subtotal (95% CI)			**219**			**212**	**69.0%**	**0.85 [-1.36, 3.05]**
Heterogeneity: Tau² = 3.64; Chi² = 13.87, df = 3 (P = 0.003); I² = 78%								
Test for overall effect: Z = 0.75 (P = 0.45)								
1.1.2 TexCR vs Usual Care								
Maddison 2014	27.7	5.94	85	28.06	6.88	86	19.0%	-0.36 [-2.29, 1.57]
Salvetti 2008	31.7	8.1	19	26.8	7.2	20	9.0%	4.90 [0.08, 9.72]
Zutz 2007	46.2	11.55	8	35.35	6.3	5	3.1%	10.85 [1.13, 20.57]
Subtotal (95% CI)			**112**			**111**	**31.0%**	**3.72 [-1.96, 9.39]**
Heterogeneity: Tau² = 17.68; Chi² = 8.27, df = 2 (P = 0.02); I² = 76%								
Test for overall effect: Z = 1.28 (P = 0.20)								
Total (95% CI)			**331**			**323**	**100.0%**	**1.29 [-0.54, 3.11]**
Heterogeneity: Tau² = 3.59; Chi² = 23.08, df = 6 (P = 0.0008); I² = 74%								
Test for overall effect: Z = 1.38 (P = 0.17)								
Test for subgroup differences: Chi² = 0.85, df = 1 (P = 0.36), I² = 0%								

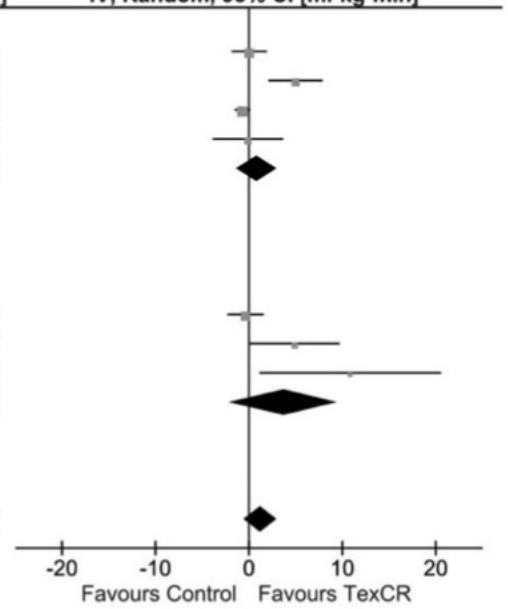


Figure 2 Forest plot for maximal aerobic exercise capacity.

JOURNAL OF THE AMERICAN COLLEGE OF CARDIOLOGY VOL. 74, NO. 1, 2019

PUBLISHED BY ELSEVIER

AACVPR/AHA/ACC SCIENTIFIC STATEMENT

Home-Based Cardiac Rehabilitation

A Scientific Statement From the American Association of Cardiovascular and Pulmonary Rehabilitation, the American Heart Association, and the American College of Cardiology

cardiopulmonary exercise testing on completion of the intervention. However, in at least 20 of the studies we reviewed, the effect of HBCR on improvements in exercise capacity (ie, peak oxygen uptake) appears to be similar to that observed from CBCR.

Six-year follow-up of a randomised controlled trial examining hospital versus home-based exercise training after coronary artery bypass graft surgery

Kelly M Smith,[1] Robert S McKelvie,[2] Kevin E Thorpe,[3] Heather M Arthur[4,5]

Heart 2011;**97**:1169–1174. doi:10.1136/hrt.2010.202036

Table 4 Exercise and anthropometric profiles over the 6-year study

	Hospital				Home			
	Baseline (n=122)	**Discharge (n=112)**	**1 year (n=100)**	**Long-term (n=74)**	**Baseline (n=120)**	**Discharge (n=109)**	**1 year (n=96)**	**Long-term (n=70)**
Peak Vo_2 (ml/min)	1221±274	1616±455	1534±438	1412±356	1260±306	1567±430	1566±437	1543±444*
$METs_{peak}$	4.5±0.9	6.2±1.5	5.9±1.5	4.9±1.2	5.07±0.9	6.4±1.3	6.4±1.4	5.4±1.3†
Peak work rate (kpm)	531±161	761±279	693±246	595±164	564±192	713±250	721±243	692±181‡
PASE			171.8±87.9	139.7±66.5			228.2±102.1‡	166.7±90.2†
Weight (kg)	80.7±14.8*	81.2±14.7	81.9±16.8	83.7±18.3	77.5±11.9	77.8±12	78.1±13	80.6±11.5
BMI (kg/m^2)	28.0±4.5	28.2±4.5	28.4±5.3	29.1±6.0	26.8±3.4	26.9±3.4	27.0±3.4	27.5±3.5
WHR	0.94±0.08	0.92±0.07	0.94±0.08	0.94±0.07	0.94±0.07	0.90±0.06	0.90±0.06	0.93±0.06

LTF data represent imputed values.
*Significant between-group difference, $p \leq 0.05$.
†Significant between-group difference, $p \leq 0.01$.
‡Significant between-group difference, $p \leq 0.0001$.
BMI, body mass index; Vo_2, oxygen uptake; PASE, Physical Activity Scale in the Elderly; WHR, waist-to-hip ratio.

Telehealth exercise-based cardiac rehabilitation: a systematic review and meta-analysis

Jonathan C Rawstorn,[1,2] Nicholas Gant,[2] Artur Direito,[1] Christina Beckmann,[3] Ralph Maddison[1]

Rawstorn JC, *et al*. *Heart* 2016;**102**:1183–1192

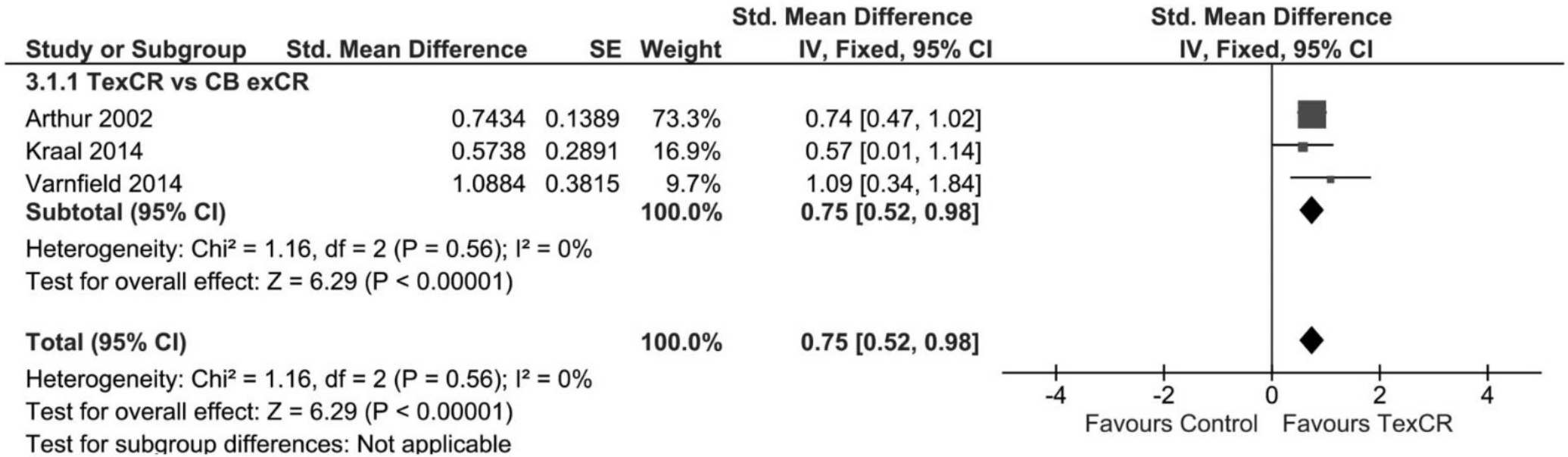


Figure 4 Forest plot for exercise adherence. CBexCR, centre-based exercise-based cardiac rehabilitation; TexCR, telehealth exercise-based cardiac rehabilitation.

medicina

MDPI

Article

The Use of Virtual Therapy in Cardiac Rehabilitation of Female Patients with Heart Disease

Sandra Jóźwik [1], Błażej Cieślik [2,*], Robert Gajda [3] and Joanna Szczepańska-Gieracha [1]

Medicina **2021**, *57*, 768. https://doi.org/10.3390/medicina57080768

Table 2. Comparison of mental status in the experimental and control group before and after rehabilitation.

Characteristic	Measurement	Group		*p*
		Experimental (*N* = 17)	Control (*N* = 26)	
		Mean (SD)	Mean (SD)	
HADS	Baseline	14.29 (8.04)	16.27 (7.52)	0.42
	Final	12.94 (7.08)	16.81 (7.64)	0.10
HADS-Anxiety	Baseline	7.88 (4.27)	8.92 (4.21)	0.44
	Final	7.88 (3.69)	9.54 (4.17)	0.19
HADS-Depression	Baseline	6.41 (4.21)	7.35 (3.80)	0.46
	Final	5.06 (3.88)	7.27 (4.00)	0.07
General stress score	Baseline	59.82 (20.00)	65.88 (16.69)	0.29
	Final	55.18 (16.02)	69.50 (14.30)	0.004
Emotional tension	Baseline	23.29 (7.92)	25.00 (6.39)	0.28
	Final	21.76 (6.54)	27.08 (5.63)	0.005
External stress	Baseline	16.59 (6.21)	19.08 (6.15)	0.20
	Final	15.12 (5.87)	19.77 (5.53)	0.01
Intrapsychic stress	Baseline	19.94 (8.17)	21.81 (6.12)	0.40
	Final	18.29 (6.72)	22.65 (5.30)	0.02

HADS—Hospital Anxiety and Depression Scale; SD—Standard Deviation.

Listening to patients: Choice in cardiac rehabilitation

Jenny Wingham [a,*], Hasnain M. Dalal [b,1], Kieran G. Sweeney [c,2], Philip H. Evans [d,3]

[a] *Knowledge Spa, Royal Cornwall Hospital Trust, Truro, TR1 3HD, UK*
[b] *Royal Cornwall Hospital Trust, Truro, TR1 3HD, UK*
[c] *Peninsula Medical School, Haighton Building, St. Luke's Campus, Exeter, EX1 2LU, UK*
[d] *PenRen (Peninsula Primary Care Research Network), Peninsula Medical School, Smeall Building, St. Lukes Campus, Exeter, EX1 2LU, UK*

European Journal of Cardiovascular Nursing 5 (2006) 289 – 294

In the main study, 230 patients were recruited of which 104 were randomised. Of the remaining 126, 72 (57%) chose home-based and 54 (43%) chose hospital-based CR. In this

Critères d'inclusion

Canadian Journal of Cardiology 36 (2020) 1317–1321

Training/Practice

Contemporary Issues in Cardiology Practice

Cardiac Rehabilitation During the COVID-19 Era: Guidance on Implementing Virtual Care

Eligible patients

All patients eligible for conventional CBCR should be considered for participation in VCR in some capacity and ideally should include a component of exercise training. This

Critères d’inclusion

- MCAS
  - Stable
  - Infarctus sans élévation du segment ST
  - Infarctus avec élévation du segment ST
  - Post chirurgie de pontage ou chirurgie valvulaire
- Insuffisance cardiaque
- *Maladie vasculaire périphérique*

Canadian Journal of Cardiology 30 (2014) 837–849

Society Guidelines

Canadian Cardiovascular Society Guidelines for the Diagnosis and Management of Stable Ischemic Heart Disease

IV. Provision of Appropriate Clinical Follow-up

RECOMMENDATION

1. We suggest that a resting ECG be acquired with a change in symptom status or in the setting of annual routine clinical follow-up (Conditional Recommendation, Low-Quality Evidence).
2. We suggest that patients with SIHD who have not previously participated be referred to a comprehensive cardiac rehabilitation program (Conditional Recommendation, Moderate-Quality Evidence).
3. We suggest that asymptomatic patients with SIHD, with the approval of their physician, should accumulate 150 minutes of moderate to vigorous physical activity per week, preferably in bouts of 10 minutes or more, with additional exercise providing additional benefits (Conditional Recommendation, Moderate-Quality Evidence).

2014 AHA/ACC Guideline for the Management of Patients With Non–ST-Elevation Acute Coronary Syndromes

A Report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines

6.3.1. Cardiac Rehabilitation and Physical Activity: Recommendation

Class I

1. **All eligible patients with NSTE-ACS should be referred to a comprehensive cardiovascular rehabilitation program either before hospital discharge or during the first outpatient visit.[449–452] (*Level of Evidence: B*)**

Canadian Cardiovascular Society Working Group: Providing a perspective on the 2007 focused update of the American College of Cardiology and American Heart Association 2004 guidelines for the management of ST elevation myocardial infarction

Robert C Welsh MD FRCPC[1], Andrew Travers MD[2], Thao Huynh MD[3], Warren J Cantor MD[4,5]

Can J Cardiol Vol 25 No 1 January 2009

Aggressive lifestyle modification, risk factor management and cardiac rehabilitation should be promoted in all patients following STEMI. *Formal smoking cessation programs should be encouraged in the hospital, and* every tobacco user and family member should be advised to quit during every visit to a health care provider.

Canadian Journal of Cardiology 33 (2017) 1342–1433

Society Guidelines

2017 Comprehensive Update of the Canadian Cardiovascular Society Guidelines for the Management of Heart Failure

RECOMMENDATION

71. We recommend regular exercise to improve exercise capacity, symptoms, and quality of life in all HF patients (Strong Recommendation; Moderate-Quality Evidence).
72. We recommend regular exercise in HF patients with reduced EF to decrease hospital admissions (Strong Recommendation; Moderate-Quality Evidence).

Values and Preferences. These recommendations have placed a high value on regular exercise and not emphasized structured exercise training because it is recognized that not all patients will be able to participate in a structured exercise training program because of patient preferences or availability of resources.

2016 AHA/ACC Guideline on the Management of Patients With Lower Extremity Peripheral Artery Disease: Executive Summary

A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines

Recommendations for Structured Exercise Therapy

COR	LOE	Recommendations
I	A	In patients with claudication, a supervised exercise program is recommended to improve functional status and QoL and to reduce leg symptoms.[24–26,28–34,36,169,170]
I	B-R	A supervised exercise program should be discussed as a treatment option for claudication before possible revascularization.[24–26]
IIa	A	In patients with PAD, a structured community- or home-based exercise program with behavioral change techniques can be beneficial to improve walking ability and functional status.[37,80,86,171]
IIa	A	In patients with claudication, alternative strategies of exercise therapy, including upper-body ergometry, cycling, and pain-free or low-intensity walking that avoids moderate-to-maximum claudication while walking, can be beneficial to improve walking ability and functional status.[27,173,175,176]

Malgré toutes ces recommendations…

Canadian Journal of Cardiology 27 (2011) 192–199

Society Position Statement

Systematizing Inpatient Referral to Cardiac Rehabilitation 2010: Canadian Association of Cardiac Rehabilitation and Canadian Cardiovascular Society Joint Position Paper

Endorsed by the Cardiac Care Network of Ontario

Conclusions

Despite the proven benefits of CR,[3] only an average of 34% of eligible patients are referred,[55] and 20% ultimately enroll.[21] This trend runs counter to evidence-based clinical

Évaluation

- Évaluation en présentiel demeure le 1er choix

- Rôles de l'évaluation initiale
  - S'assurer de la stabilité du patient (ischémie, arythmie, etc)
  - Optimiser la prescription d'exercice

  - Nécessité d'une épreuve monitorée?

Critères d’exclusion à approche virtuelle?

BOX 2.

atients

HIGHEST R
Characteris
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- Presence
  recovery
- Presence
  of breath
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- High leve
  baseline)
- Presence
  (*i.e.*, chro

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increasing workloads) or recovery (*i.e.*, severe postexercise hypotension)

Cochrane Library

Cochrane Database of Systematic Reviews

Home-based versus centre-based cardiac rehabilitation (Review)

Anderson L, Sharp GA, Norton RJ, Dalal H, Dean SG, Jolly K, Cowie A, Zawada A, Taylor RS

Home-based versus supervised centre-based cardiac rehabilitation for heart disease

Patient or population: Patients with heart disease

Settings: Home and rehabilitation centres

Intervention: Home-based cardiac rehabilitation

Comparison: Centre-based cardiac rehabilitation

Outcomes	Anticipated absolute effects* (95% CI)	
	Risk with centre-based	Risk with home-base
Total mortality Number of deaths Follow-up: up to 12 months	Study population	
	22 per 1,000	26 per 1,000 (14 to 47)

ESC 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

Secondary prevention through comprehensive cardiac rehabilitation has been recognized as the most cost-effective intervention to ensure favourable outcomes across a wide spectrum of cardiovascular disease, reducing cardiovascular mortality, morbidity and disability, and to increase quality of life. The delivery of a comprehensive and 'modern' cardiac rehabilitation programme is mandatory both in the

Comment faire le virage virtuel en réadapation?

Canadian Cardiovascular Society

Société canadienne de cardiologie

Live Webinar #10

Wednesday, May 27 @ 8pm Eastern

The New "Virtual Reality": Practical Approaches to the Delivery of Cardiac Rehabilitation Care during the COVID-19 Crisis

A CCS Rapid Response Team Presentation

Click to Register today!

Moderator:

David Bewick, MD, FRCPC, FACC, FACP

Panelists and Topics:

Marie-Kristelle Ross, MD, FRCPC - Principles

Paul Oh, MD, MSc, FRCPC - The New "Virtual Reality": Practical Approaches to the Delivery of Cardiac Rehabilitation Care during the COVID-19 Crisis

Thais Coutinho, MD - Challenges and Obstacles to Care Delivery

Jennifer Harris, BSCPT, ACSM CEP - Practical Tips for Establishing Virtual Programming

Nate Moulson, MD - Planning for the "Ebb and Flow" of an Uncertain Future

Virtual Cardiovascular Prevention and Rehabilitation Implementation Toolkit

Heart & Stroke in collaboration with CACPR, update 2021

Rebecca McGuff, Lisa Cotie, Jennifer Harris, Carolyn Baer, Kathryn Brisco, Dylan Chipperfield, Bruce Moran, Rodolfo Pike, Marie-Kristelle Ross, Colin Yeung, Dylan Blacquiere, Anita Mountain, Natalie Gierman, Patrice Lindsay (Senior Editor, Corresponding Author), on behalf of Heart and Stroke Foundation of Canada in collaboration with the Canadian Association of Cardiovascular Prevention and Rehabilitation. Virtual Cardiovascular Prevention and Rehabilitation Implementation Toolkit. 2021; Heart and Stroke Foundation of Canada.

Checklists for Virtual Cardiovascular Prevention and Rehabilitation Services

Legend: ***Healthcare provider*** refers to any healthcare professional providing services to an individual through virtual modalities and ***working within their regulated scope of practice***. ***Individual*** refers to the person (patient, client) receiving the healthcare services from the healthcare provider. ***Session*** refers to the actual virtual healthcare encounter between the healthcare provider and individual. Note, in some cases a ***Substitute Decision Maker*** (SDM) may be involved in a session with or on behalf of the individual. We do not include this person in the checklist specifically for conciseness but do acknowledge they may be included. **Synchronous** refers to sessions that occur in 'real time', where the individual and healthcare provider are connected (e.g., live videoconferencing, audio (such as telephone), or real-time instant messaging). **Asynchronous** refers to sessions that are not occurring in 'real time' (e.g., email, texting, voicemail, other messaging modalities, pre-recorded video).

Key Elements	For the Healthcare Provider	For the Individual, Family and Caregivers
Infrastructure and Technology		
Administrative structure to manage scheduled VCR service appointments **(i.e., system coordination, privacy & security, supporting documentation and manuals, referral management, contract management, monitoring and evaluation).**	☐ Ensure there is administrative and clinical cardiovascular leadership to support VCR development and implementation across provider groups. ☐ Align VCR model with provincial and/or regional CR service structure and priorities and integrate or connect VCR program with available resources and supports. ☐ Ensure that appropriate and approved protocols and cardiovascular care pathways are in place to address VCR. ☐ Maintain regularly updated clinical lists and use algorithms to determine which individuals can be seen virtually vs. those that must be seen in person. *See Virtual Care Decision framework.* ☐ Method or system to change service delivery to a different format of VCR as required (e.g., telephone to video or vice versa, and virtual care to in person or vice versa). ☐ Develop or modify policies to address items related to VCR such as: o Verification of identity. o Establish location of individual. o Privacy. o Informed **consent for VCR.** ▪ Patient understanding of risks and benefits of VCR	☐ Some individuals may be worried about participating in a virtual healthcare session and sharing personal information online. Ask the healthcare provider what steps they have in place to ensure your information is secure and protected. ☐ Individual to be made aware that virtual healthcare sessions can be part of routine cardiovascular care. ☐ Individual has internet enabled device (telephone, smartphone, tablet, desktop, or laptop computer with webcam). ☐ Individual has access to reliable internet connection and/or telephone connection. ☐ Clarify mode of virtual communication to book the virtual healthcare session, conduct the session, share results and information, follow up (e.g., email, phone call or video call). ☐ Individual to receive information on which program or application (APP) the healthcare provider will be using, and whether

En conclusion

- Réadaptation cardiaque virtuelle au moins aussi efficace que readaptation usuelle

- S’adresse à tous les patients éligibles à la readaptation conventionnelle
    - (bémol pour les patients à haut risque et les patients avec claudication)

- Plusieurs outils simples et sécuritaires pour faciliter la transition en mode virtuel