



FORUM EUROPÉEN, CŒUR, EXERCICE & PRÉVENTION



**Les cas difficiles ou peu fréquents en
réadaptation:**

la dissection coronaire

Muriel BIGOT
La Rochelle



www.forumeuropeen.com

Conflits d'intérêts

Aucun

DES RAPPELS

UNE HISTOIRE

DES ETUDES

DES RECOMMANDATIONS

UNE CONCLUSION

SCAD

90% des SCAD surviennent chez des femmes

Non liée à l'athéromatose

Symptômes « classiques »

Âge moyen jeune: souvent entre 30 et 60 ans

24% des IDM chez les femmes avant 50 ans

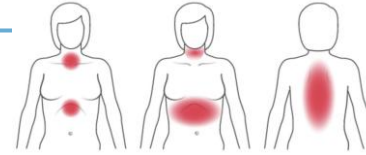
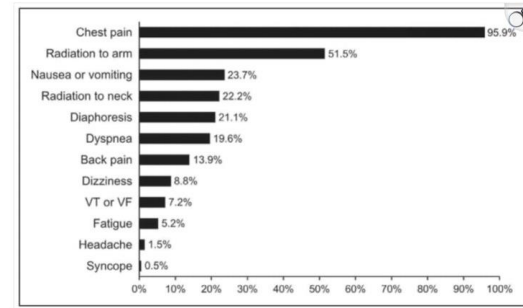


Figure 4. Frequency of presenting symptoms of acute spontaneous coronary artery dissection.



VF indicates ventricular fibrillation; VT, ventricular tachycardia. Adapted from Luong et al¹³² with permission. Copyright © 2017, Wiley Periodicals, Inc.

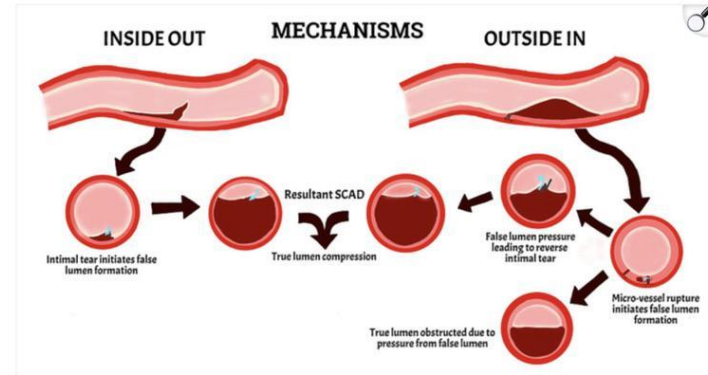
Association maladies du tissu conjonctif: Marfan, Ehler Danlos, dysplasie fibromusculaire (origine génétique commune?)

Risque de récurrence à 10 ans: 40% *Recurrent spontaneous coronary artery dissection 2021 Echeverry, Circulation*

FDR:

- Dysplasie fibromusculaire
- Anomalies du tissu conjonctif
- Inflammations systémiques (Crohn..)
- Cocaïne
- Stress émotionnel intense
- Effort physique intense
- Hormonothérapie oestro-progestative
- Grossesse et accouchement
- Hypothyroïdie
- Dans 50% des cas: stress émotionnel (décès d'un proche..) ou physique (accouchement, vomissement, haltérophilie...)

Figure 1. Illustration depicting the proposed mechanisms of pathogenesis of spontaneous coronary artery dissection (i.e., "Inside Out" and "Outside In" phenomena.



The blue arrows represent the direction of blood flow facilitating false lumen formation (maroon) and resulting from an intimal insult (black bolt arrows) on the true lumen (beige).

SCAD: Spontaneous Coronary Artery Dissection

Image Credits: Eman N. Ahmed

Etude observationnelle, 51 centres

Coronarographie, IVUS, OCT

424 patients

Age moyen 51 ans

90% femmes, 16% obésité, 32% HTA, 90% < 2 FRCV

96% SCA

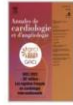
46% stress émotionnel intense

12% exercice physique intense

2.7% toxiques (cannabis, cocaïne)


45% détection DFM

Stratégie: médicale, apc, chir.....réadaptation?



Mise au point

Registre national des dissections coronaires spontanées : le registre DISCO

N. Combaret , P. Motreff

Prise en charge non interventionnelle le plus souvent

Spontaneous coronary artery dissection: Principles of management. Nicole Pristera and al. Cleveland Clinic Journal of Medicine November 2021

Medications for spontaneous coronary artery dissection

Indicated

Aspirin 81 mg daily

P2Y12 inhibitor if patient has undergone percutaneous coronary intervention (PCI)

Beta-blocker

Debated

P2Y12 inhibitor if no PCI: consider a 1- to 3-month course as tolerated

Statin (appropriate if otherwise indicated)

Angiotensin-converting enzyme inhibitor or angiotensin receptor blocker in patients with left ventricular dysfunction

Contraindicated

Thrombolysis

Spontaneous coronary artery dissection: Principles of management.

Nicole Pristera and al. Cleveland Clinic Journal of Medicine November 2021

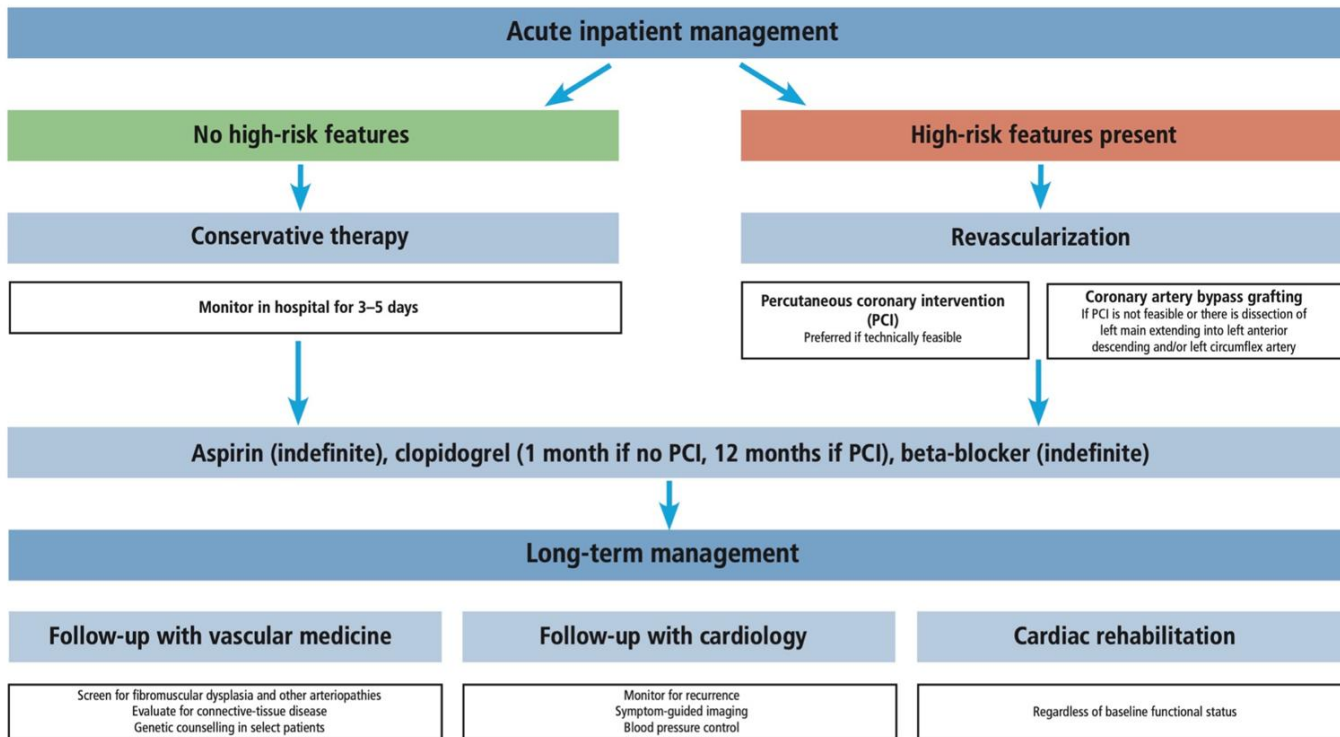
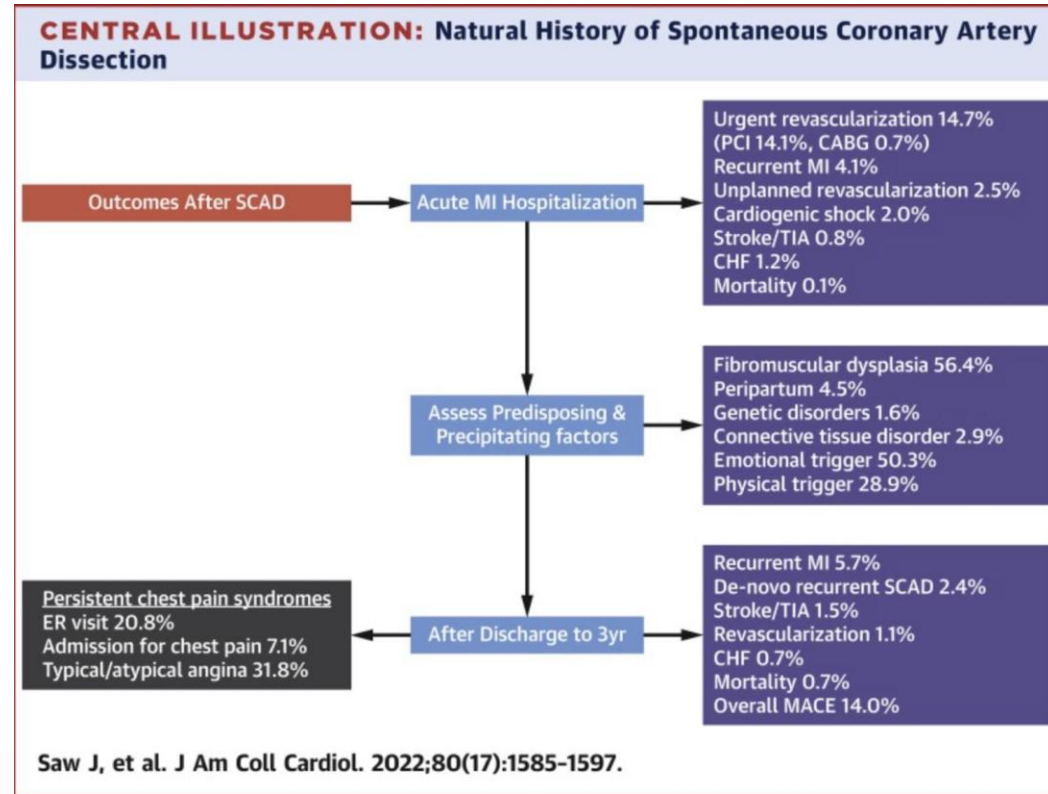


Figure 1. Our approach to the management of spontaneous coronary artery dissection.

Canadian Spontaneous Coronary Artery Dissection Cohort Study: 3-Year Outcomes

Suivi à 3 ans
750 patients





Enquête australienne sur 30 patients

- Peur de la mort
- Peur de la récurrence
- Perte de contrôle
- Perte de confiance
- Difficultés de retour au travail
- Manque d'informations, difficultés de compréhension

Fort impact émotionnel et psychologique

Intérêt de la réadaptation

L'histoire: Mme M. Hélène, 57 ans

Commerçante puis assistante gestion CCI

Ancienne sportive de haut niveau (cyclisme), marche 1h 4-5 fois/semaine

Dyslipidémie avec LDL 1.46 g/l

ATCD: thyroïdite Hashimoto, paraplégie réversible en 4H en 2018 sans étiologie, kyste pancréatique, maltraitance dans l'enfance

Tabac: non, alcool: non

Nov 2018: SCA ST+ inférieur au travail sur dissection spontanée avec hématome IVP, traitement médical.

Bilan pan-vasculaire: artériographie TSA, artères rénales, aorte, AMI sans anomalie. Médecine vasculaire: pas d'argument fort pour une maladie du tissu élastique. Réadaptation cardiaque.

Oct 2020: SCA ST- antérieur au travail sur dissection IVA moyenne, traitement médical.

Récidive de DT à J5: progression de la dissection IVA avec hématome de paroi. Angioscanner aorte et TSA: irrégularité aorte abdominale. Réadaptation cardiaque.

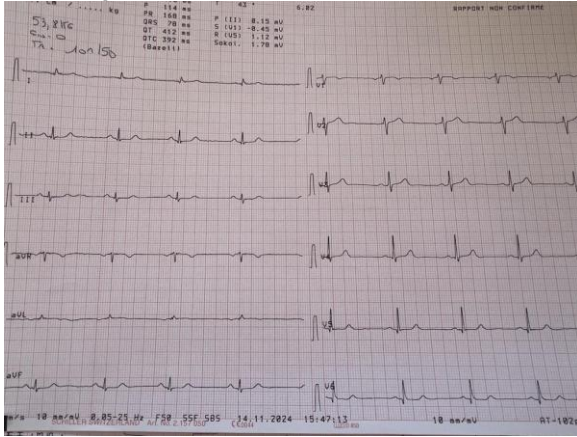
Suivi annuel en médecine vasculaire

2022: bilan génétique "négatif" (pas de gène "anévrisme aortique" ni "dissection artérielle")

10.08.2024: SCA ST- au travail sur hématome 1ère marginale, Fevg 50% sur hypokinésie inférieure. ttt AAS 75 bisoprolol 1.25 perindopril 2 pravastatine 10 ezetimibe 10 L thyroxine

Mme M. Hélène, 57 ans: Bilan entrée

ECG: séquelle inférieure?



ETT: FEVG 57%, SGL -16%

<u>Volume VG</u>	
<u>FE auto</u>	
VG Vol TD A4C Q	17.6 ml
FE VG A4C Q	62.2 %
VG Vol TD A2C Q	86.5 ml
FE VG A2C Q	52.2 %
VG Vol TD BiP Q	63.4 ml
FE VG BiP Q	57.4 %
VG Vol TD Ind BiP Q	17 ml/m ²
<u>AFI VG</u>	
G peak SL Full(A3C)	-14.8 %
G peak SL Full(A4C)	-19.7 %
G peak SL Full(A2C)	-13.4 %
G peak SL Full(Avg)	-16.0 %

EEE: 93% fnt sous betabloquant 120w 1 mn
négative pour la recherche d'ischémie

Mme M. Hélène, 57 ans: Projet thérapeutique

Conseil AP : endurance et sans Valsalva

Objectif: diminuer le risque de récurrence et améliorer la capacité d'effort

Marche ext/j "rose"

Ergo/j: 50/105w avec progression

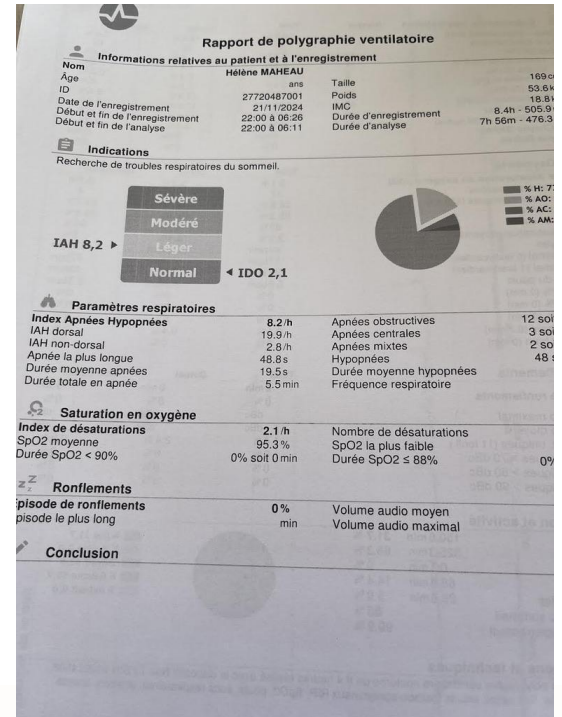
Gym/j "rose"

Relaxation

Cohérence cardiaque

ETP activité physique et endurance

PG: SAOS léger (IAH 8.2/h) positionnel (somnoshirt/ceinture ronfless)



Mme M. Hélène, 57 ans: Bilan de fin de séjour

Pas de DT, FC 54/mn

Ergométrie :IT=50w 2' 135w 1' ou 110w

Marche :10km/h

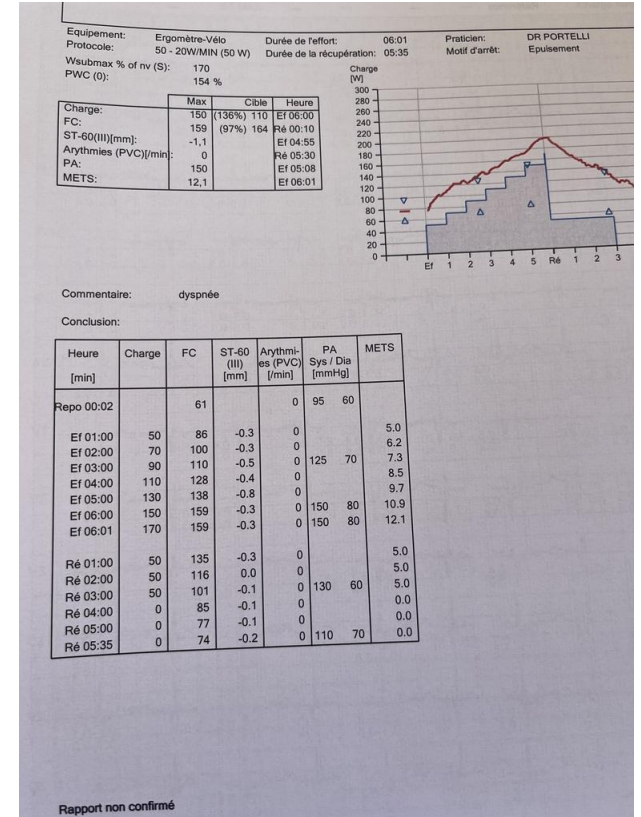
EES: 97%fmt 150 W 1 mn, gain de performance de 30 w

Bilan psycho: syndrome anxieux marqué,
accompagnement préconisé

Allègement hormonothérapie thyroïdienne (TSH 0.275)

Suivi en médecine vasculaire

Phase III: marche, vélo, natation





Réévaluation à 4 mois: Pas de nouvel événement cardiovasculaire



Activité physique quotidienne

N'a pas repris le travail (stress professionnel intense), a vu le médecin du travail, demande d'invalidité envisagée

Pratique la cohérence cardiaque quotidiennement.

A poursuivi un suivi psychologique (gestion des émotions, stress ++)
et un accompagnement diététique

LDL < 0,55 g/l

Consultation de suivi en médecine vasculaire programmée en avril 2025

Un épisode d'ecchymose spontanée du membre supérieur à la marche qui l'a beaucoup inquiétée.



Cardiac Rehabilitation After Spontaneous Coronary Artery Dissection



Silber and al.

Journal of Cardiopulmonary Rehabilitation and Prevention 2015.

9 femmes

12 jours après SCAD

28 sessions: souplesse, stretching, exercice aérobic, RM

+ accompagnement nutrition poids stress

VO2: augmentation de 18%

TM6: augmentation 22%

Poids - 1.1 kg

Amélioration score anxiété et dépression

Aucun effet adverse de la réadaptation

Usefulness of Cardiac Rehabilitation After Spontaneous Coronary Artery Dissection

Chayakrit Krittanawong and al. Am J Cardiol 2016

Etude multicentrique observationnelle

Cohorte de 354 patients

75% réadaptation

46 ans +/- 10 ans

96% femmes

18 séances +/- 12

82% amélioration physique

75% amélioration psychologique

The
American Journal
of Cardiology

Pb: non adressage, difficultés de transport, pb de prise en charge, manque de motivation, gestion des enfants...

The First Dedicated Cardiac Rehabilitation Program for Patients With Spontaneous Coronary Artery Dissection

Annie Y Chou and al; Can J Cardiol 2016

Cohorte de 70 femmes, Âge moyen 52.3 +/-8.4 ans

Durée moyenne 12.4 semaines

62% DT persistantes en début de séjour, 37% en fin de séjour

EE: 10 mets à l'entrée, 11.5 à la sortie

Amélioration questionnaire de dépression

28% suivi social, 27% suivi psychologique

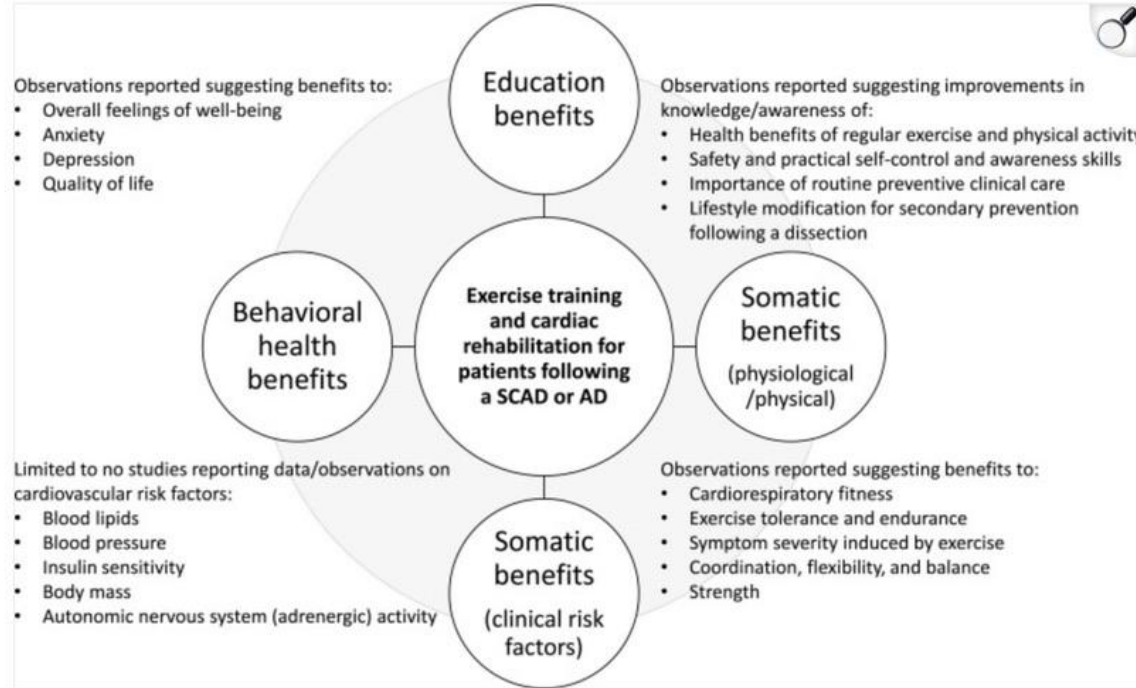
Suivi 3.8 ans +/- 2/9 ans: 4% MACE versus 26% si pas de réadaptation

Conclusions: This is the first dedicated SCAD-CR program. Our program appears **safe and beneficial in improving chest pain, exercise capacity, psychosocial well-being and cardiovascular events.**



Bénéfices multiples de la réadaptation

Van Iterson and al, EHJ 2022



The proposed benefits associated with incorporating exercise training and cardiac rehabilitation as a core component of the secondary prevention therapeutic strategy for stable patients recovering from a spontaneous coronary artery dissection or aortic dissection.

Individualized exercise prescription and cardiac rehabilitation following a SCAD or aortic dissection

Table 3 Key principles, components, and recommendations to be considered for developing an individualized exercise prescription for patients recovering from a spontaneous coronary artery dissection or aortic dissection

Foundational principles of exercise prescription: F.I.T.T.—V.P.

- **Frequency:**
 - Number of weekly sessions/bouts: ≥ 3 days weekly is minimum; preferred is all days.
- **Intensity:**
 - Aerobic/cardio exercise:
 - Optimal: determine heart rate and/or work-rates by referencing VT1 and VT2 landmarks identified on cardiopulmonary exercise testing.
 - Percentage of $\dot{V}O_2$ reserve, heart rate reserve, and/or work-rate.
 - Strength/resistance: low loads/weights.
 - Always avoid loads/weight that require sustained and/or forceful engagement of Valsalva manoeuvre. Breath holding should always be avoided.
 - Avoid lifting to local muscle fatigue and/or whole body exhaustion.
 - Avoid isometric exercises (e.g. body planks).
 - Avoid explosive/plyometric movements.
- **Rating of perceived exertion (RPE, Borg scale 6–20):**
 - Applicable to any form of exercise, but should not be used independently of objective training zones, such as heart rate, during aerobic/cardio exercise bouts.
- **Time** (not including time required for warm up and cool down periods):
 - Total number of weekly minutes: ≥ 150 ; long-term goal is to achieve 300 min weekly.
 - Total number of minutes per training day.
 - Continuous minutes are preferred if physical conditioning allows.
 - Avoid exercising to exhaustion.
 - Bout duration within a training day (e.g. deconditioned individual).
 - Multiple bouts may be needed within a chosen training day if unable to sustain continuous exercise of medium-sized length, e.g. 20 min.
 - Two-to-three 10 min bouts interspersed with rest periods as needed.
 - Very low-intensity warm up and active cool down periods.
 - Each lasting at least 8–10 min in length (more time is encouraged, as needed).
 - Should be performed with all aerobic exercise sessions.
 - The warm up should be performed using the intended training mode.
- **Type:**
 - Aerobic/cardio activities: highest priority.
 - Strength/resistance activities: if interested and time allows, up to 1–2 days weekly.
 - Flexibility: static and/or dynamic types (no breath holding), 2–3 days weekly.
 - Coordination/balance.
 - Cross-fit and/or other high-intensity training exercise regimens should always be avoided.
- **Volume:**
 - Computing kcal/week or METS-minutes/weekly is not practical and often inaccurate for estimating volume. Volume is trackable as documentation occurs for weekly session: duration, intensity, and frequency.
- **Progression:**
 - Progression should be individualized to each patient.
 - As tolerated and based on initial physical conditioning, risk level, and familiarity with exercise, training progressions are commonly considered in the order of session: duration, intensity, and weekly frequency.
 - Only one feature should be progressed at a time.
 - Cardio exercise session duration may be increased 1–5 min every 2–3 weeks until achieving the plan goal. Cardio exercise session intensity may be increased up to 5% every 2–3 weeks until achieving the plan goal.

$\dot{V}O_2$, oxygen uptake; heart rate reserve ($= HR_{max} + [HR_{peak} - HR_{rest}] \cdot X\%$); VT1, first ventilatory threshold/lactate threshold; VT2, second ventilatory threshold/respiratory compensation point.

Table 4 Individualized exercise testing and exercise prescription recommendations for stable patients recovering from a spontaneous coronary artery dissection or aortic dissection

Exercise training type(s)	Clinical exercise testing	Main exercise prescription features
Aerobic training: <ul style="list-style-type: none"> • Continuous minutes • ≥ 150 min/weekly spread over ≥ 3 days of week • Eventual progression up to ≥ 300 min/weekly spread over all days of the week, as tolerated <p>Examples to consider:</p> <ul style="list-style-type: none"> • Treadmill • Cycle ergometer <ul style="list-style-type: none"> • Semi-recumbent if hypotension is a risk • Elliptical (minimize upper body involvement) • Stepper <p>Examples to avoid:</p> <ul style="list-style-type: none"> • Rowing • Cross-country skiing • Hiking with weighted backpack • High-intensity interval training <p>Maintain an active lifestyle on non-scheduled training days.</p> <ul style="list-style-type: none"> • Minimize sedentary time <p>Lifting and intensity precautions should always be followed, for example:</p> <ul style="list-style-type: none"> • Leisure activities • Household chores • Yard work/gardening 	<p>Maximal effort CPET is the optimal clinical exercise test</p> <ul style="list-style-type: none"> • Upright cycle ergometry using a 'ramp-slope' work-rate increase is preferred as the default. <p>Exercise stress testing is acceptable when CPET is unavailable.</p> <p>All measurements should be acquired while patient is on optimal rate-limiting and anti-pressor medications:</p> <p>Peak exercise:</p> <ul style="list-style-type: none"> • $\dot{V}O_2$ • HR • SBP/DBP • Watts or speed/grade <p>VT1 and VT2 domains</p> <ul style="list-style-type: none"> • $\dot{V}O_2$ • HR • SBP/DBP • Watts or speed/grade <p>CPET data should be recorded throughout testing and reviewed while interpreting both submaximal and peak response data.</p> <p>Where appropriate, other CPET data and variables in addition to those listed above should be considered when developing the exercise prescription.</p>	<p>Exercise training should be performed while on optimal rate-limiting and anti-pressor medications.</p> <p>Training intensities should correspond to exercise BP $< 150/90$ mmHg. Avoid intensities causing > 10 mmHg rise in DBP above rest.</p> <p>A dedicated period of ≥ 8–10 min for both warm up and active cool down are required. Prescribe an initial low intensity phase (Min. 4 weeks, longer as needed):</p> <ul style="list-style-type: none"> • HR or Watts • $< VT1$ • $\leq 40\% \dot{V}O_{2reserve}$ • $\leq 40\%$ HRR • RPE 10–11 • Time: up to 20–25 min • Continuous or split into 2–3 ≤ 10 min bouts with rest taken, as needed <p>If exercise BP remains controlled, progress to moderate intensity phase, as tolerated:</p> <ul style="list-style-type: none"> • HR or Watts • $\geq VT1$ and $< VT2$ • $\leq 70\% \dot{V}O_{2reserve}$ • $\leq 70\%$ HRR • RPE 12–14 • Time: up to 30–45 min • Continuous or split into 2–3 ≤ 15 min bouts with rest taken, as needed • Exercise < 60 min • Do not perform to exhaustion <p>Low intensity:</p> <ul style="list-style-type: none"> • Up to 3–5 exercises, non-timed circuit style • RPE < 13 • Repetitions: weight that can be lifted with perfect technique and without Valsalva strain at least 15–18 x for > 1 set • Sets: up to 2 <ul style="list-style-type: none"> • ≥ 2–3 min rest between sets • Do not use HR zones to guide intensity • Do not lift to the point of complete muscle fatigue • Total time and volume of training should not elicit feelings of whole body exhaustion
Strength, resistance, and other types of training <ul style="list-style-type: none"> • Do not consider initiating until at least 6–8 weeks of aerobic training have been completed. BP remains well controlled, and patient endorses confidence in aerobic training • Performed after aerobic training • Up to 1–2 x weekly, non-consecutive days <ul style="list-style-type: none"> • Performed after aerobic training if on same day • Functional training should be emphasized <p>Modalities to consider:</p> <ul style="list-style-type: none"> • Body weight • Free weights • Weight machines • Resistance bands <p>Examples to avoid:</p> <ul style="list-style-type: none"> • Isometric exercises • Explosive and power movements, plyometrics, agility drills, etc. • Cross-fit, obstacle course, and P90 x styles of training 	<ul style="list-style-type: none"> • Lower body strength • Knee/hip extensor and flexor/abductor and adductor • Balance • Sit-to-stand • Body weight squat • Upper body strength <ul style="list-style-type: none"> • Seated chest press • Seated shoulder press • Seated single-arm row • Seated dumbbell curls • Standing tricep pushdown • Core <ul style="list-style-type: none"> • Crunches on back • Avoid full sit-ups • Avoid weighted ball twists • Avoid straight legged raises • Avoid hanging leg raises 	<ul style="list-style-type: none"> • Low intensity: <ul style="list-style-type: none"> • Up to 3–5 exercises, non-timed circuit style • RPE < 13 • Repetitions: weight that can be lifted with perfect technique and without Valsalva strain at least 15–18 x for > 1 set • Sets: up to 2 <ul style="list-style-type: none"> • ≥ 2–3 min rest between sets • Do not use HR zones to guide intensity • Do not lift to the point of complete muscle fatigue • Total time and volume of training should not elicit feelings of whole body exhaustion

CPET, cardiopulmonary exercise testing; DBP, diastolic blood pressure; HR, heart rate; HRR, heart rate reserve ($= HR_{max} + [HR_{peak} - HR_{rest}] \cdot X\%$); RPE, rating of perceived exertion, 6–20 scale; SBP, systolic blood pressure; $\dot{V}O_{2peak}$, peak exercise oxygen uptake; VT1, first ventilatory threshold/lactate threshold; VT2, second ventilatory threshold/respiratory compensation point.

Secondary Prevention and Rehabilitation for Spontaneous Coronary Artery Dissection: A Systematic Review

30 études, aucun essai randomisé

3553 SCAD

Effet réducteur le plus puissant sur les récives: prise en charge médicamenteuse

Van Damme et al.
Secondary Prevention for SCAD

S401

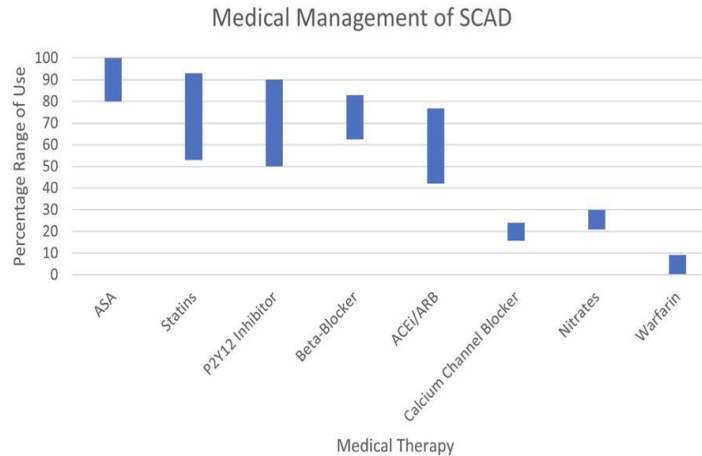


Figure 2. Visual representation of the percentage ranges of use of each medical therapy in included studies for spontaneous coronary artery dissection (SCAD) survivors. ACEi, angiotensin-converting enzyme inhibitor; ARB, angiotensin receptor blocker; ASA, acetylsalicylic acid.

Réadaptation: faisabilité et sécurité

Etudes rétrospectives, petits effectifs

Aérobie modéré et résistance légère = le plus pertinent

S406

Canadian Journal of Cardiology
Volume 39 2023

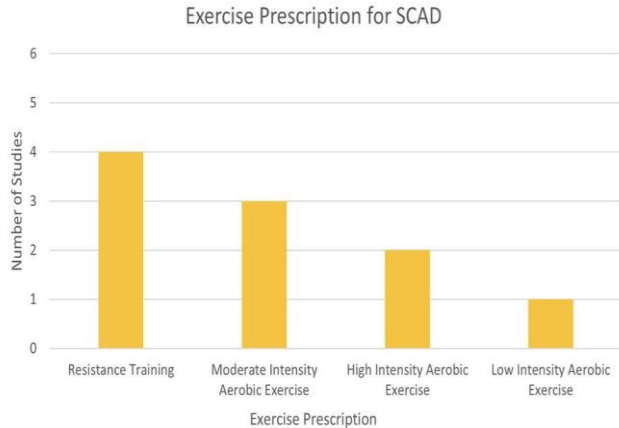


Figure 3. Overview of the number of included studies that used various exercise prescription categories for spontaneous coronary artery dissection (SCAD) survivors.

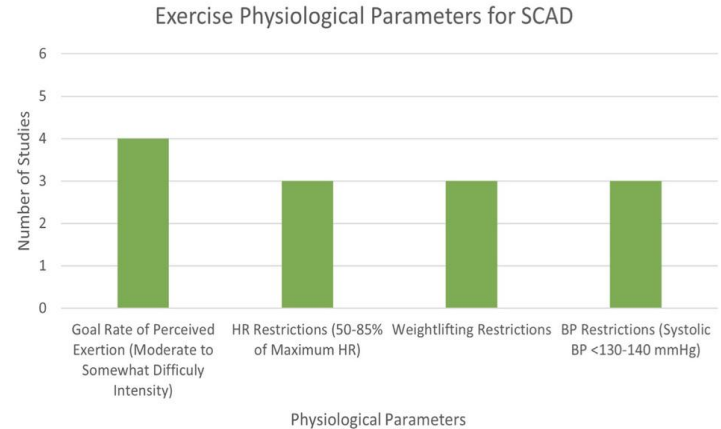


Figure 4. Overview of the number of included studies that used various physiological parameters during exercise for spontaneous coronary artery dissection (SCAD) survivors. BP, blood pressure; HR, heart rate.

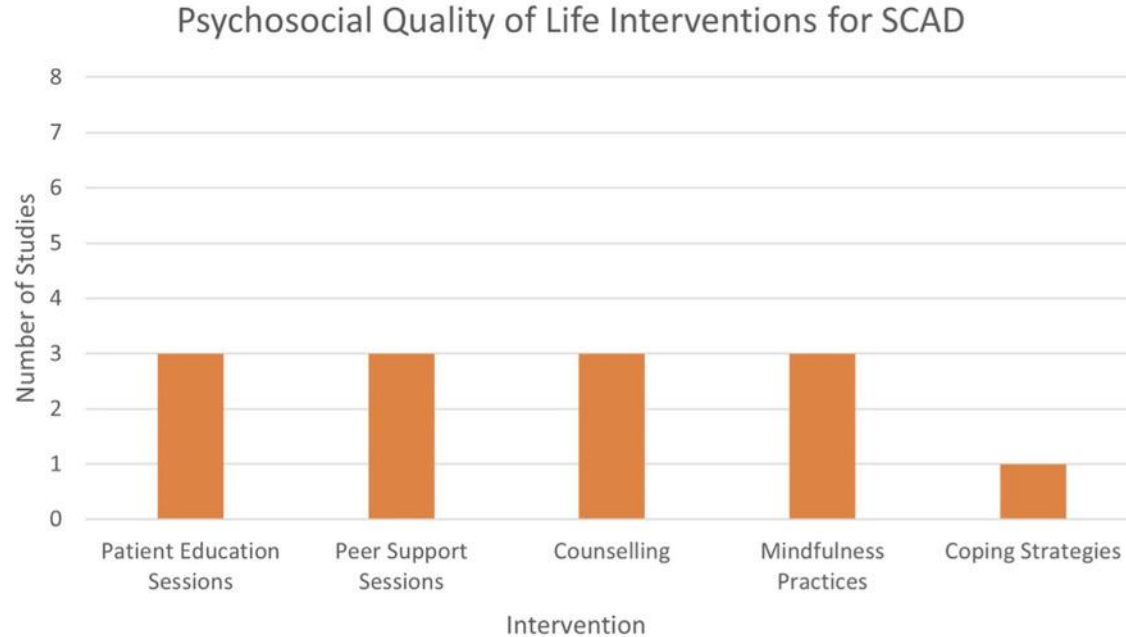


Figure 5. Overview of the number of included studies that used various psychosocial quality of life interventions for spontaneous coronary artery dissection (SCAD) survivors.

Spontaneous Coronary Artery Dissection: An Updated Comprehensive Review

Chibuike C. Agwuegbo 2024 Cureus

Etudes contradictoires

Ce qui est validé:

- Importance de la prise en charge psychologique
- Eviter Valsalva et port de charges lourdes

Ce qui est discuté: HIIT

Les résultats:

Moins de DT

Meilleur niveau d'activité physique

Moins de MACE (risque spontané 24% à 25 ans)

Moins de récurrence

2023 AHA/ACC/ACCP/ASPC/NLA/PCNA Guideline for the Management of Patients With Chronic Coronary Disease: A Report of the American Heart Association/American College of Cardiology Joint Committee on Clinical Practice Guidelines

Patients with spontaneous coronary artery dissection (SCAD) who participated in CR, compared with those who did not, had **lower MACE** and **lower rates of recurrent MI** with favorable trends in physical, emotional, and mental domains.



American
Heart
Association



2023 AHA/ACC Guideline for the Management of Patients with Chronic Coronary Disease

Developed in Collaboration with and Endorsed by the American College of Clinical Pharmacy, American Society for Preventive Cardiology, National Lipid Association and Preventive Cardiovascular Nurses Association

Endorsed by Society for Cardiovascular Angiography and Interventions



Société
Française
de Cardiologie

Guidelines

Cardiac rehabilitation recommendations of the Group Exercise Rehabilitation Sports – Prevention (GERS-P) of the French Society of Cardiology: 2023 update

Muriel Bigot^{a,*}, Jean Michel Guy^{b,1}, Catherine Monpere^c, Alain Cohen-Solal^d,
Bruno Pavy^e, Marie Christine Iliou^f, Gilles Bossier^g, Sonia Corone^h, Herve Douardⁱ,
Titi Farrokhi^h, Antoine Guerder^j, Pascal Guillo^k, Jean-Pierre Houppe^l, Theo Pezel^m,
Bernard Pierreⁿ, Stephane Roueff^o, Daniel Thomas^p, Benedicte Verges^q,
Jean Christophe Blanchard^r, Mohamed Ghannem^{s,t}, Dany Marcadet^u



Indications

MALADIE CORONAIRE (hors chirurgie)	Objectif baisse mortalité cardiaque: 26% globale: 20%	Niveau de preuve Classe	Degré d'évidence Grade	
SCA ST+ ou ST-	Réduction mortalité et des récidives	I	A	2012
	Précoce (> 3 j) amélioration du remodelage	Ila	B	2023
	Ambulatoire à privilégier	I	A	2012
Syndrome coronarien chronique (+/- APC)	Réduction de la progression du processus athéro-thrombotique Recul du seuil ischémique	I	A	IB en 2012
Dissection coronaire (4% des SCA)	au SV1 sans Valsalva	Ila	C	2023

Activité physique?

RECOMMANDÉE

Guidelines for exercise testing and prescription, American College of sports medicine 2022

Recommandations GERSP 2023

- Contrôle des FRCV et des comorbidités: HTA +++
- Prescription FITT
- Limiter l'élévation TA *Individualized exercise prescription and cardiac rehabilitation following a SCAD EHJ 2022*
- Entraînement faible intensité:
 - Aérobic faible intensité (marche, tapis, vélo, elliptique)
Borg ou SV1 *Recommandations GERSP 2023*
 - RM (répétition 1 à 3 séries de 10 exercices), pas de Valsalva
 - Etirements statiques et dynamiques
- Progression



Consignes patient

1. Echauffement (NO) et retour au calme
2. Pas de Valsalva
3. Pas d'exercice en force maximale, pas de haute intensité, pas de RM isométrique

CONCLUSION

Intérêt de la réadaptation:

- Contrôle de la FC et de la TA
- Prise en charge FRCV
- Régression des symptômes
- Amélioration capacité d'effort et aisance cardiorespiratoire
- Amélioration psychologique
- Amélioration sociale

Modalités: FITT

- Endurance et résistance sans HIIT ni Valsalva
- EFX souhaitable pour prévoir le niveau d'entraînement

Circulation. 2018 May 08; 137(19): e523–e557. doi:10.1161/CIR.0000000000000564.

Spontaneous Coronary Artery Dissection: Current State of the Science:

A Scientific Statement From the American Heart Association

Sharonne N. Hayes, MD, FAHA [Chair], Esther S.H. Kim, MD, MPH, FAHA [Co-Chair],

CONGRÈS

Cœur et Sport

19 & 20 JUIN 2025



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un an après !

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