



RÉADAPTATION RESPIRATOIRE

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CHU de REIMS

Activité physique
et pathologie
chronique

Modèle de la
BPCO

Evaluations
préalables

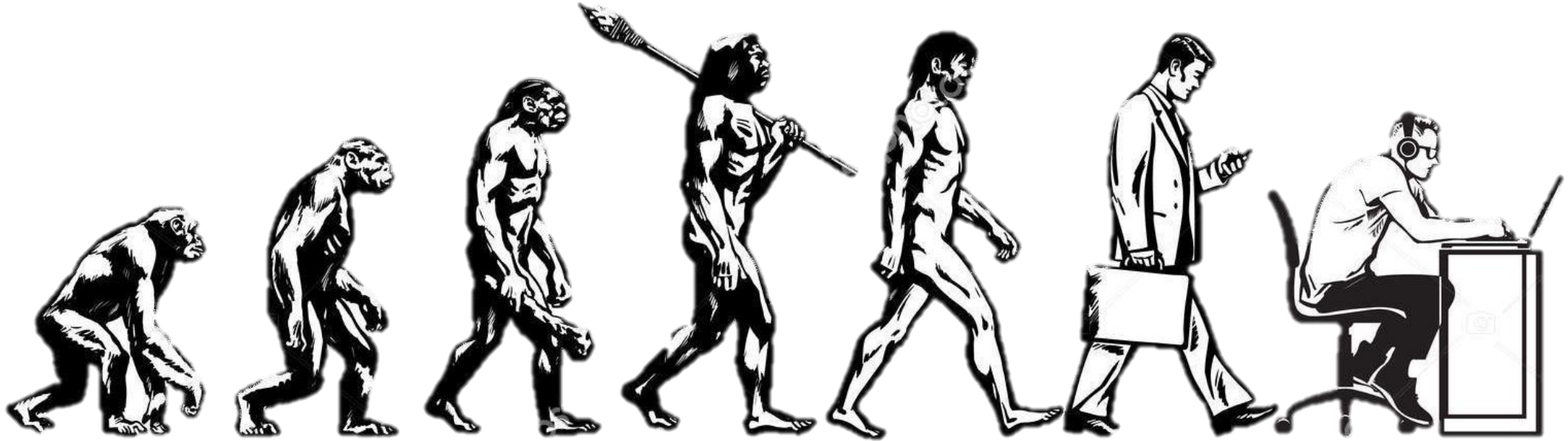
Programme de RR





Activités physiques et pathologies chroniques

PROBLÈME DE FOND ?



QUELLES RECOMMENDATIONS ?



Activité physique

Tout mouvement corporel produit par les muscles squelettiques, quel que soit le but, s'accompagnant d'une augmentation de la dépense énergétique

Sport

Sous-ensemble de l'AP, spécialisé et organisé, sous forme de compétition, le plus souvent impliquant des organisations ou clubs

Exercice (physique)

Activité physique et/ou sportive planifiée, structurée et répétée, réalisée dans le but de maintenir ou améliorer la santé et les capacités physiques

Activité physique adaptée

Ensemble des activités physiques et sportives adaptées aux capacités des personnes (enfants ou adultes) atteintes de maladie chronique ou de handicap

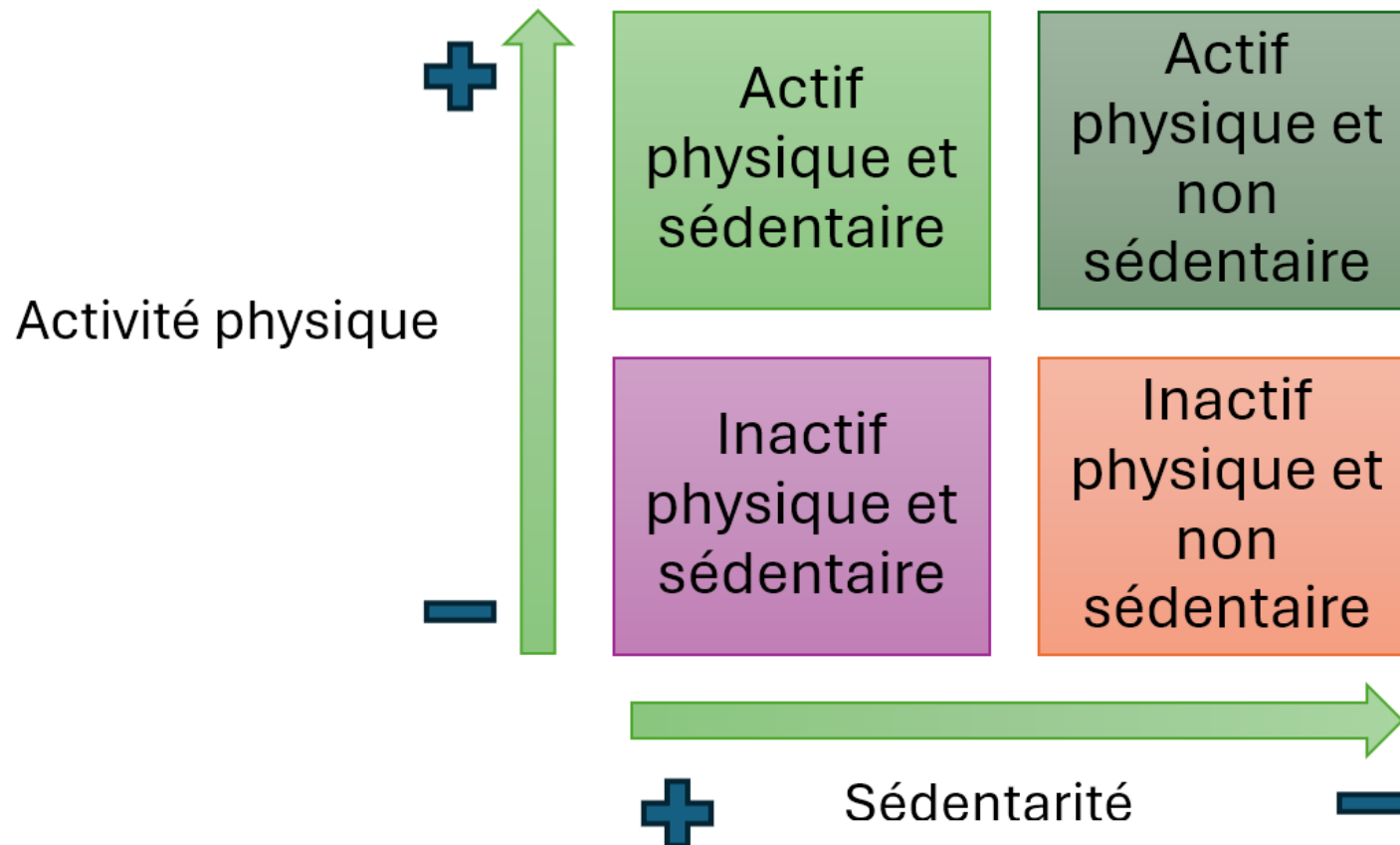
Inactivité physique

Niveau insuffisant d'activité physique d'intensité modérée à élevée
(niveau < recommandations)

Sédentarité

Situation d'éveil caractérisée par une faible dépense énergétique en position assis ou allongée

= dépense énergétique à peine supérieure à celle de repos



Inactivité physique

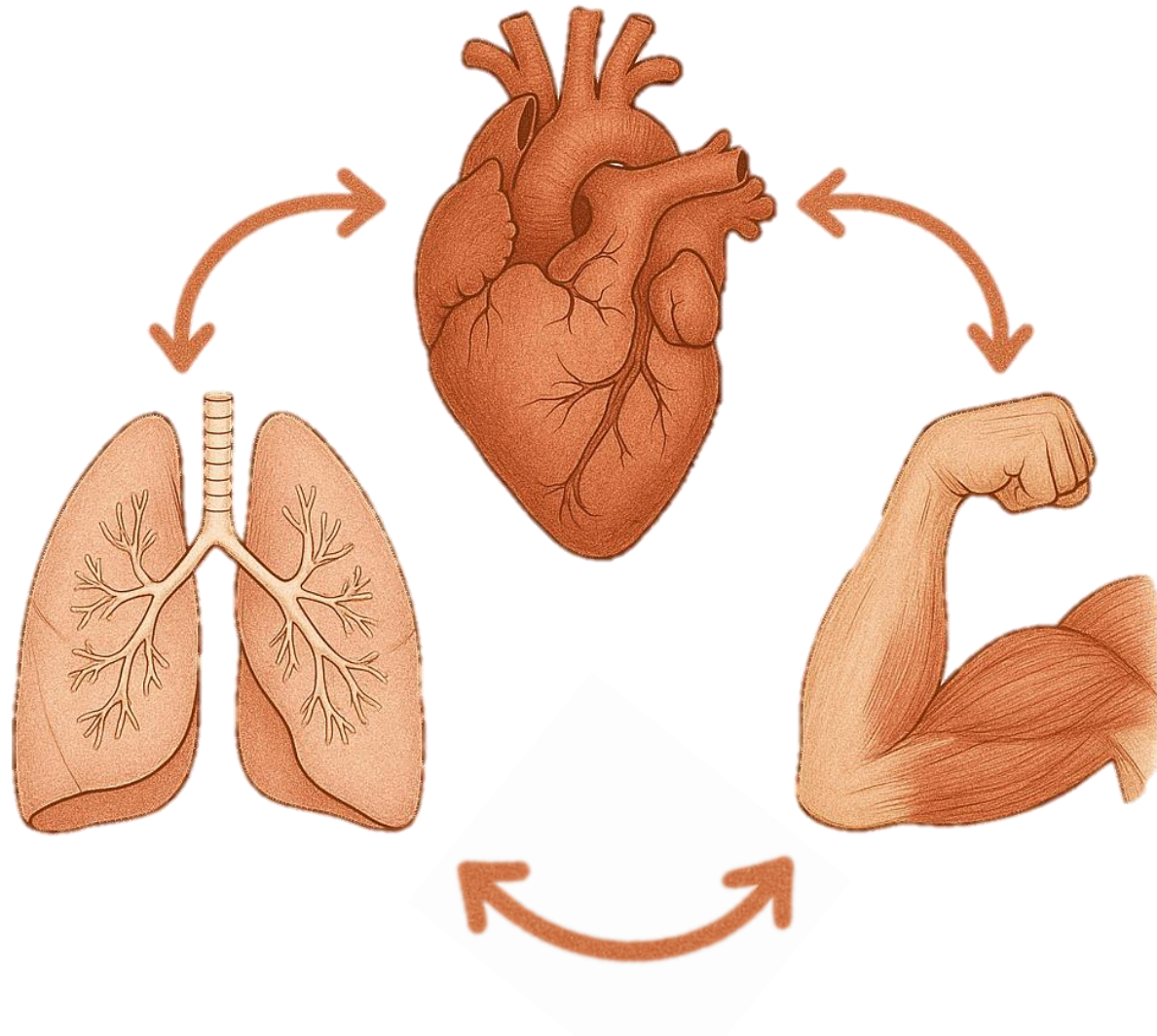
Niveau insuffisant d'activité physique d'intensité modérée à élevée
(niveau < recommandations)

Sédentarité

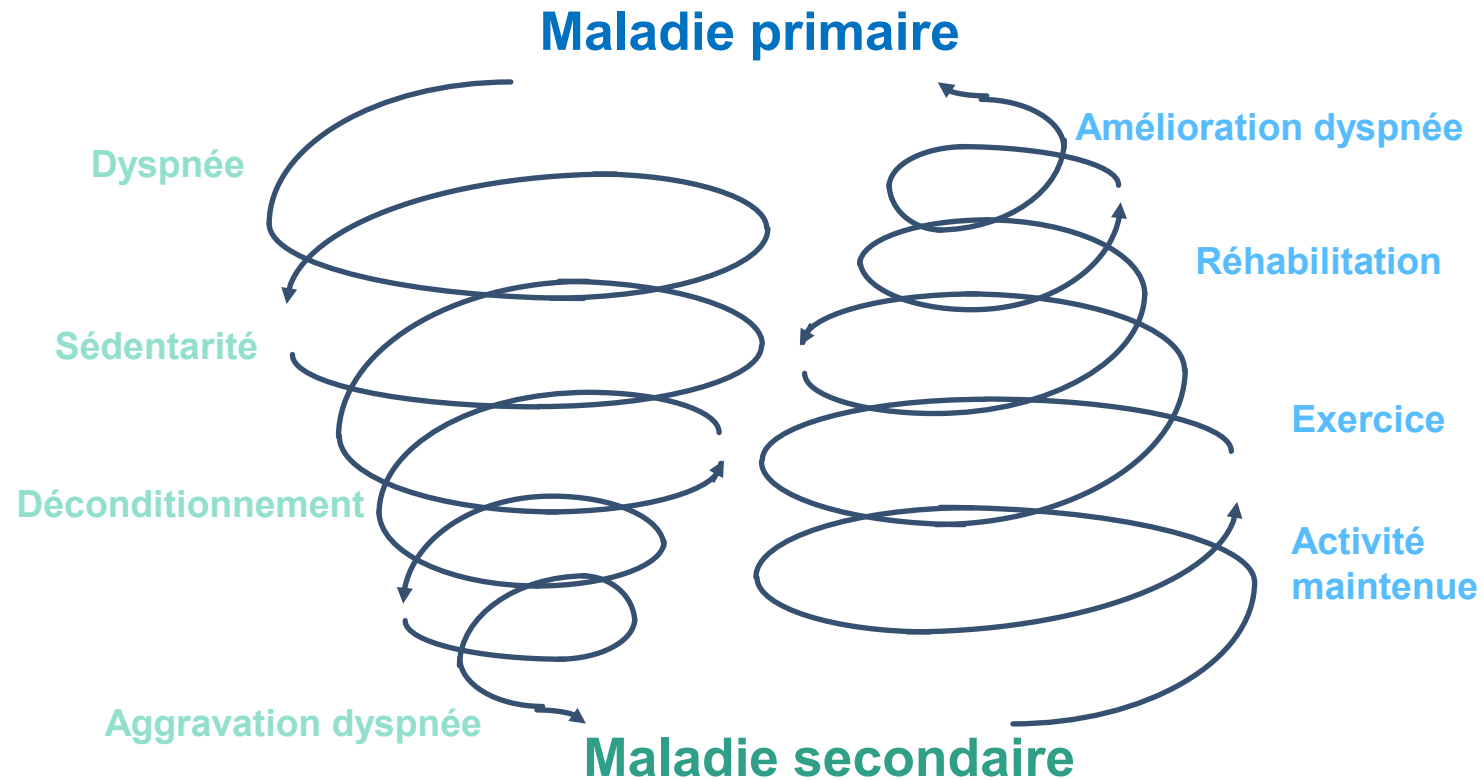
Situation d'éveil caractérisée par une faible dépense énergétique en position assis ou allongée

= dépense énergétique à peine supérieure à celle de repos

INTÉRÊT DE L'ACTIVITÉ PHYSIQUE



LE CERCLE VICIEUX DU DÉCONDITIONNEMENT



Ce n'est pas une fatalité !

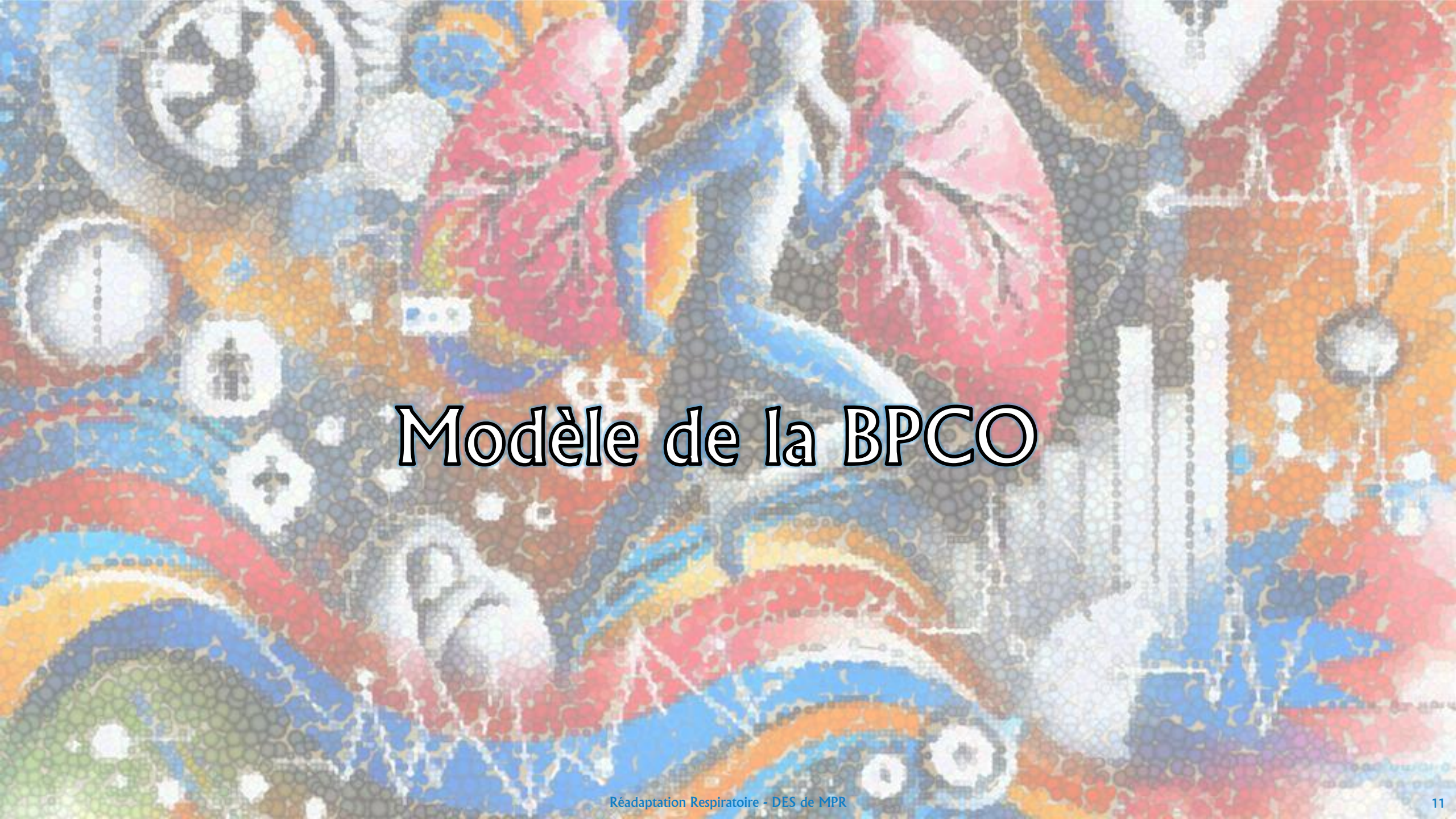
D'après Young, 1983.

Enjeu :

Bouger de façon
durable

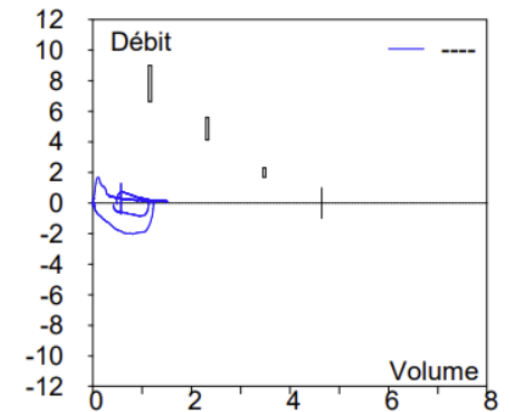
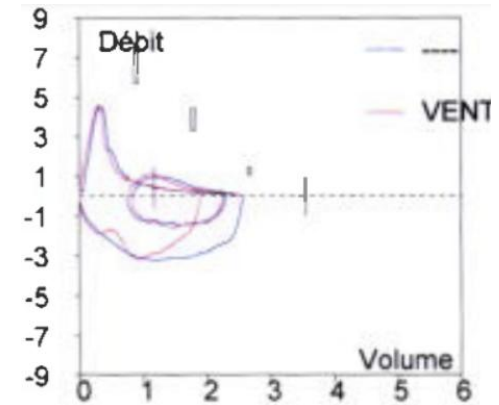
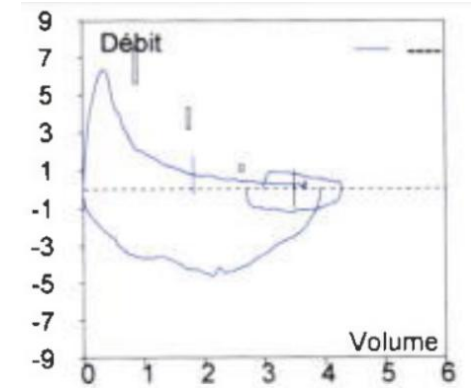
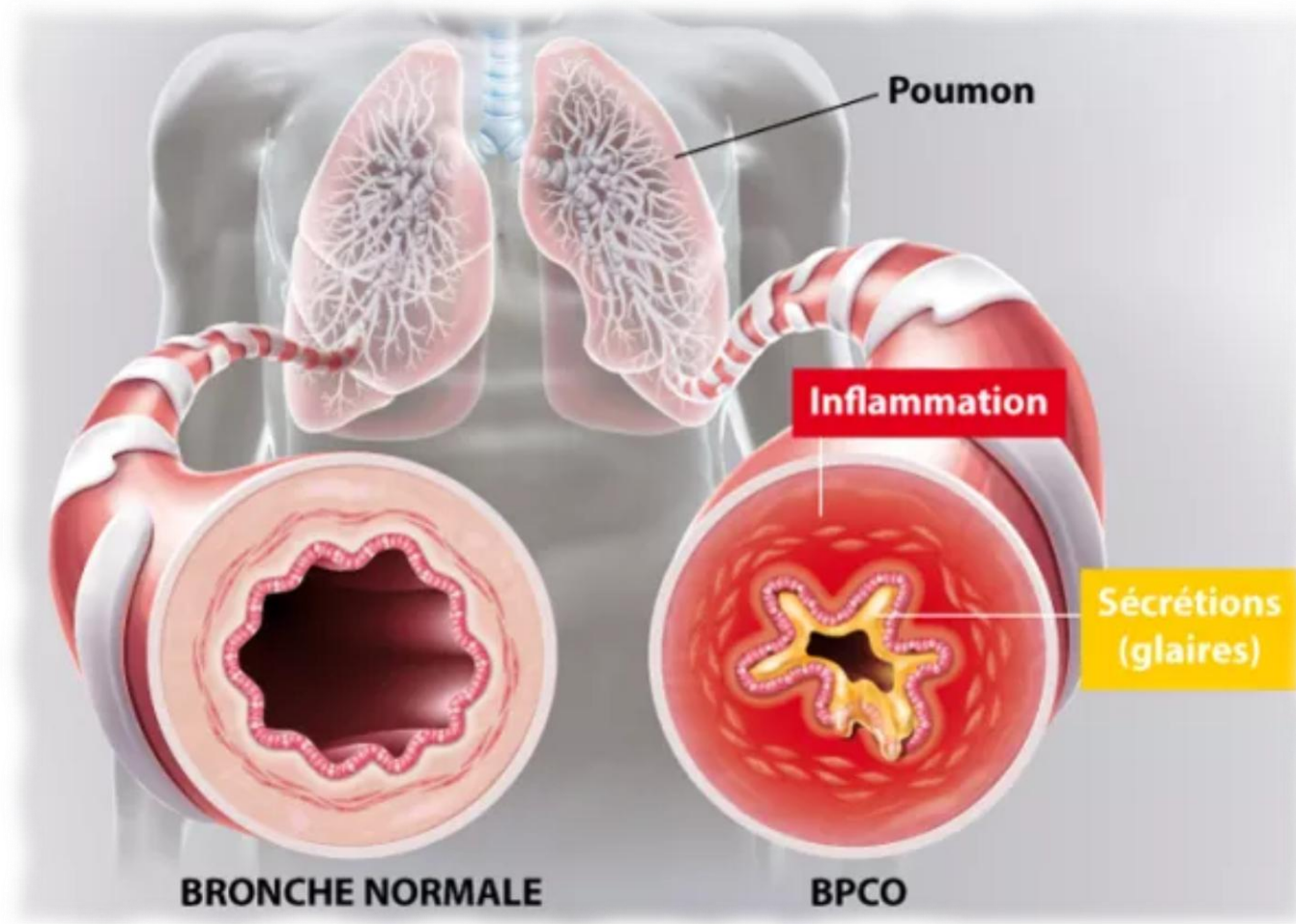
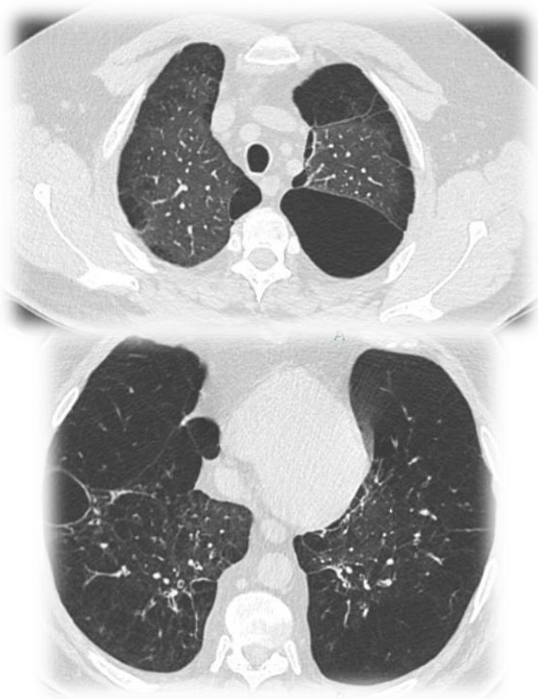
Modification des
habitudes de vie



The background is a complex, abstract composition of various colors including red, blue, orange, yellow, and white. These colors are arranged in swirling, organic patterns that resemble liquid or smoke. Overlaid on these patterns is a faint, light gray grid that covers the entire area. The overall effect is a textured, almost pixelated or mosaic-like appearance.

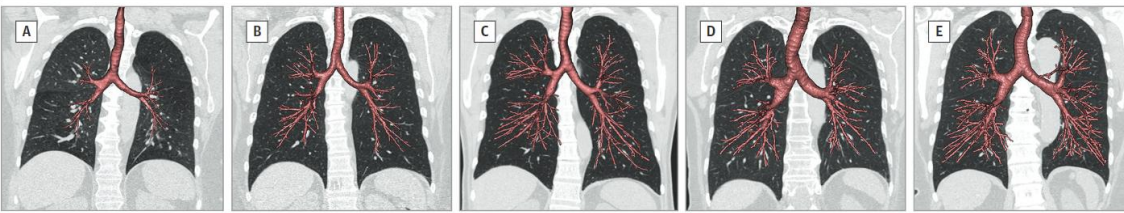
Modèle de la BPCO

LE MODÈLE DE LA BPCO



LE MODÈLE DE LA BPCO

Figure. Representative CT Images Depicting the Spectrum of Dysanapsis Quantified as the Airway to Lung Ratio Among Older Adults Free of Standard COPD Risk Factors



Asthme dans l'enfance
et parental

Tabagisme maternel

Antécédents de
bronchite,
pneumopathies,
rhinites allergiques,
eczéma

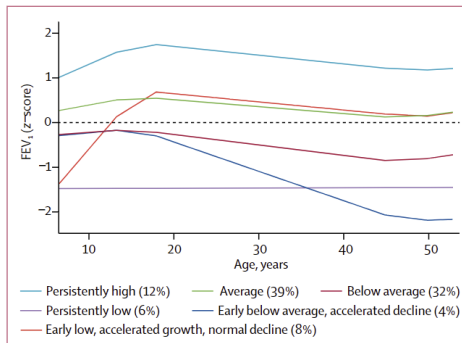
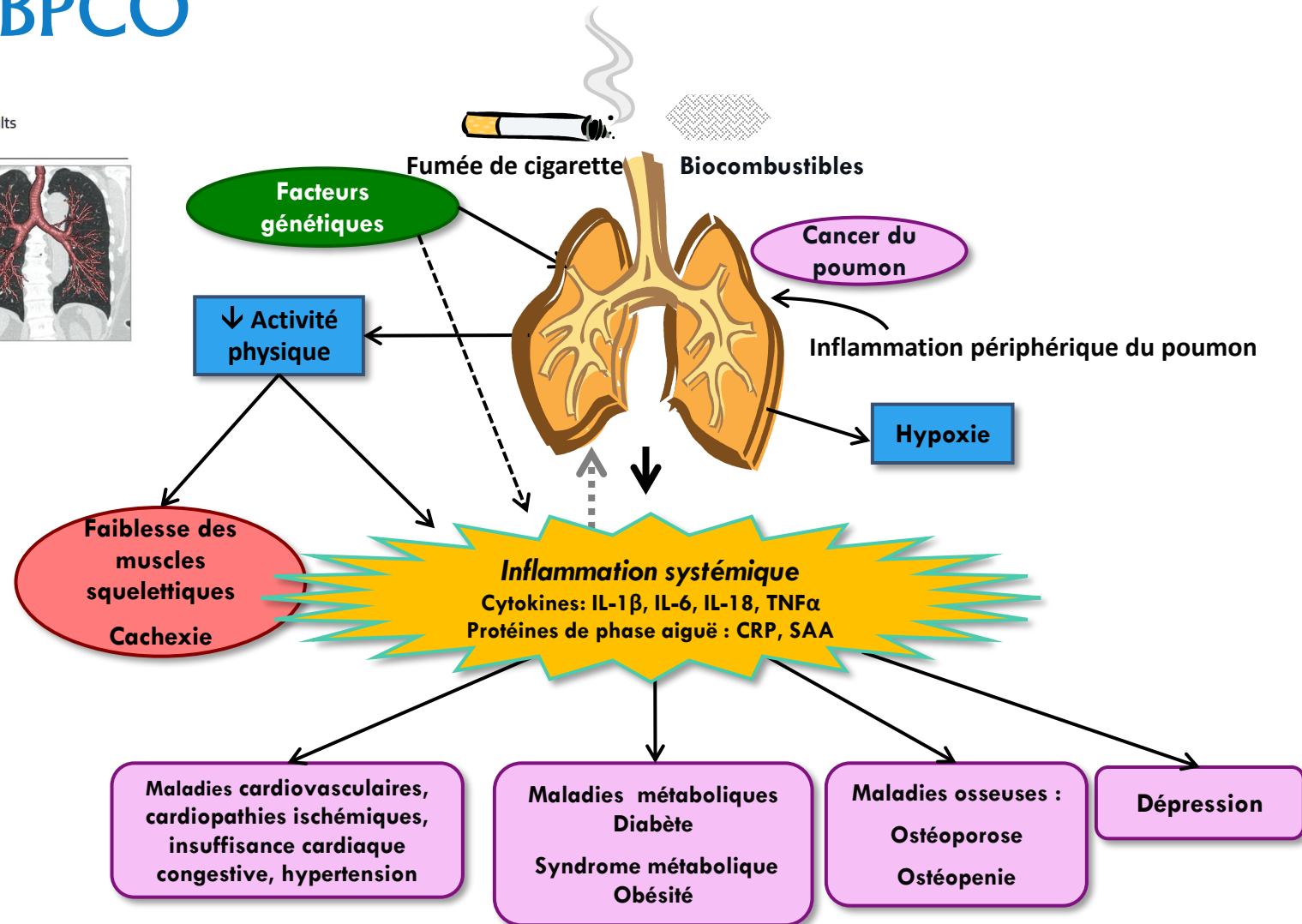


Figure 1: Trajectories of lung function (FEV₁, z-score) from 7 to 53 years of age



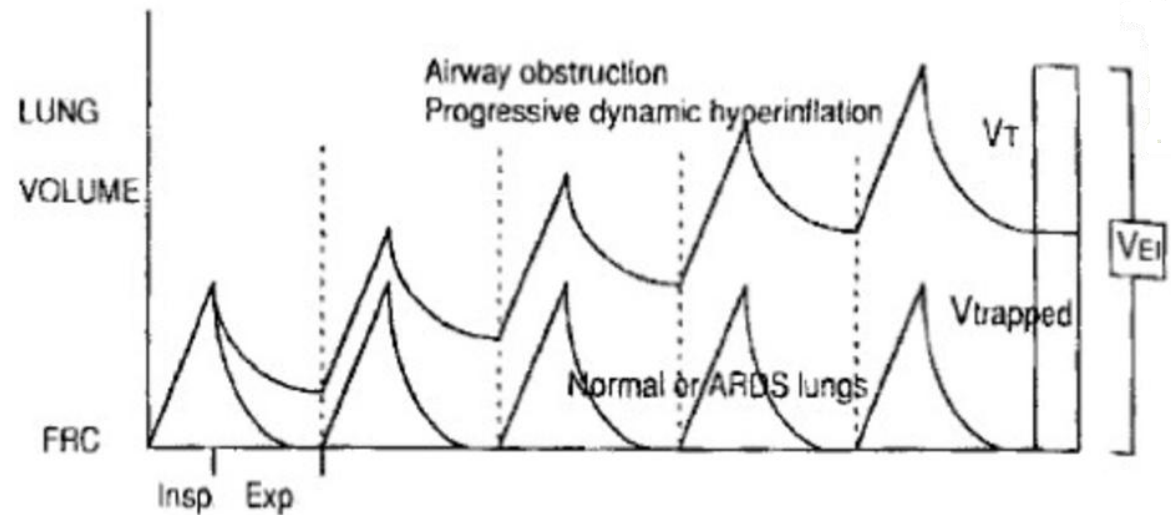
Barnes P Chronic obstructive pulmonary disease: effects beyond the lungs; *PLoS Med.* 2010; Bui DS. Childhood predictors of lung function trajectories and future COPD risk: a prospective cohort study from the first to the sixth decade of life. *Lancet Respir Med.* 2018
Smith BM. Association of Dysanapsis With Chronic Obstructive Pulmonary Disease Among Older Adults. *JAMA.* 2020; Stolz D. Towards the elimination of chronic obstructive pulmonary disease: a Lancet Commission. *Lancet.* 2022.
Vameghestahbanati M. Association of dysanapsis with mortality among older adults. *Eur Respir J.* 2023

BPCO ET DEFICIENCE/INCAPACITÉ

Insuffisance respiratoire

Dysfonction ventilatoire

Faiblesse diaphragmatique



Connolly CK, Dysfunctional breathing in COPD, Thorax 2003

Silva CS, Dynamic hyperinflation during activities of daily living in COPD patients. Chronic Respiratory Disease. 2015

Priori R, The effect of posture on asynchronous chest wall movement in COPD. J Appl Physiol (1985). 2013

Sharma BB, Diaphragmatic dysfunction in chronic obstructive pulmonary disease. Lung India. 2019

Swallow EB et al. Quadriceps strength predicts mortality in patients with moderate to severe chronic obstructive pulmonary disease. Thorax. 2007

Seymour JM et al. The prevalence of quadriceps weakness in COPD and the relationship with disease severity. Eur Respir J. 2010

Oliveira, Cristino C. Falls prevalence and risk factors in people with chronic obstructive pulmonary disease: a systematic review. Respiratory Medicine 2021

Pumar MI, Anxiety and depression-Important psychological comorbidities of COPD. J Thorac Dis. 2014

BPCO ET DEFICIENCE/INCAPACITÉ

30% des BPCO chuteur
24 % chutes > 2 / an

Insuffisance respiratoire

Sarcopénie / déconditionnement musculaire

Dysfonction ventilatoire

Trouble d'équilibration / chute

Faiblesse diaphragmatique

Dénutrition

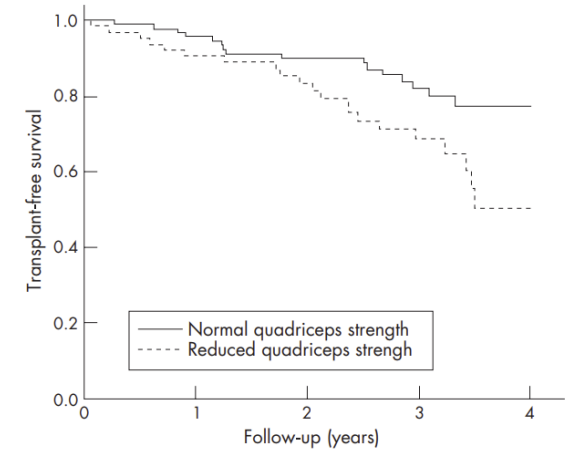


Figure 2 Transplant-free survival for patients with normal and reduced quadriceps strength, as defined by a quadriceps maximal voluntary contraction force $>120\%$ or $<120\%$ of body mass index. The curves are significantly different, $p=0.017$.

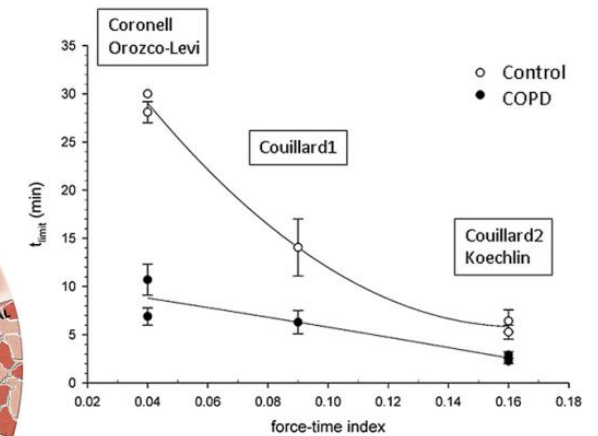
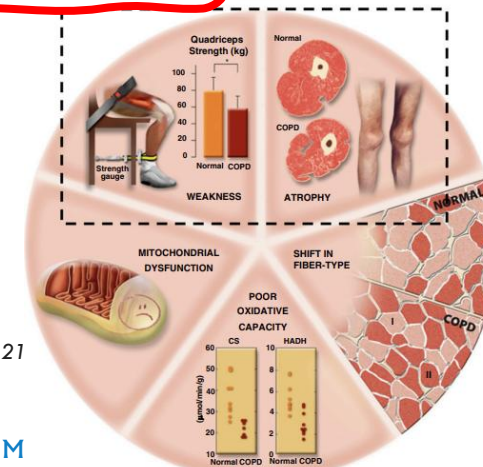


Figure 5 – A comparison of endurance time plotted against the force-time index between individuals with COPD and healthy control subjects. Relative force-time index of repeated contractions = (contraction force $\times$ maximum voluntary contraction) $\times$ duty cycle, where duty cycle = time of contraction $\times$ total time of cycle. t_{limit} = endurance time.

Connolly CK, Dysfunctional breathing in COPD, Thorax 2003
Silva CS, Dynamic hyperinflation during activities of daily living in COPD patients. Chronic Respiratory Disease. 2015
Priori R, The effect of posture on asynchronous chest wall movement in COPD. J Appl Physiol (1985). 2013
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BPCO ET DEFICIENCE/INCAPACITÉ

Insuffisance respiratoire

Sarcopénie / déconditionnement
musculaire

Altération cognitive

Dysfonction ventilatoire

Trouble d'équilibration / chute

Faiblesse diaphragmatique

Dénutrition

Anxété / dépression / Stress

Connolly CK, Dysfunctional breathing in COPD, Thorax 2003
Silva CS, Dynamic hyperinflation during activities of daily living in COPD patients. Chronic Respiratory Disease. 2015
Priori R, The effect of posture on asynchronous chest wall movement in COPD. J Appl Physiol (1985). 2013
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COGNITION ET BPCO

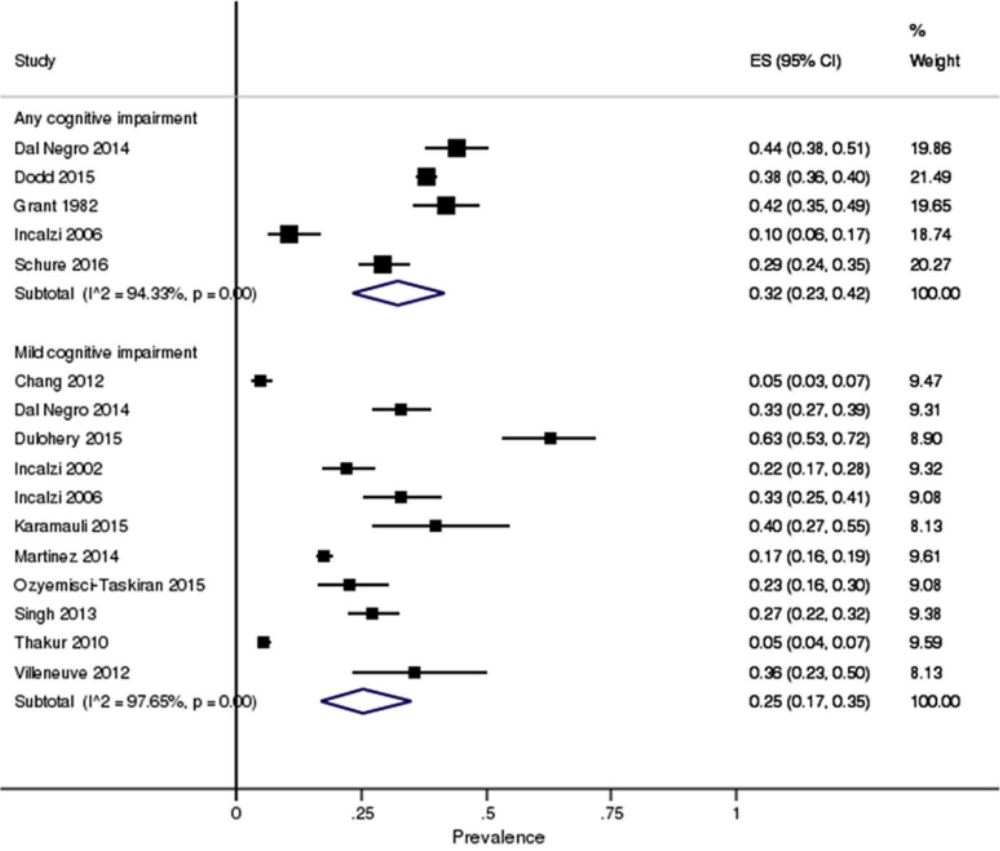


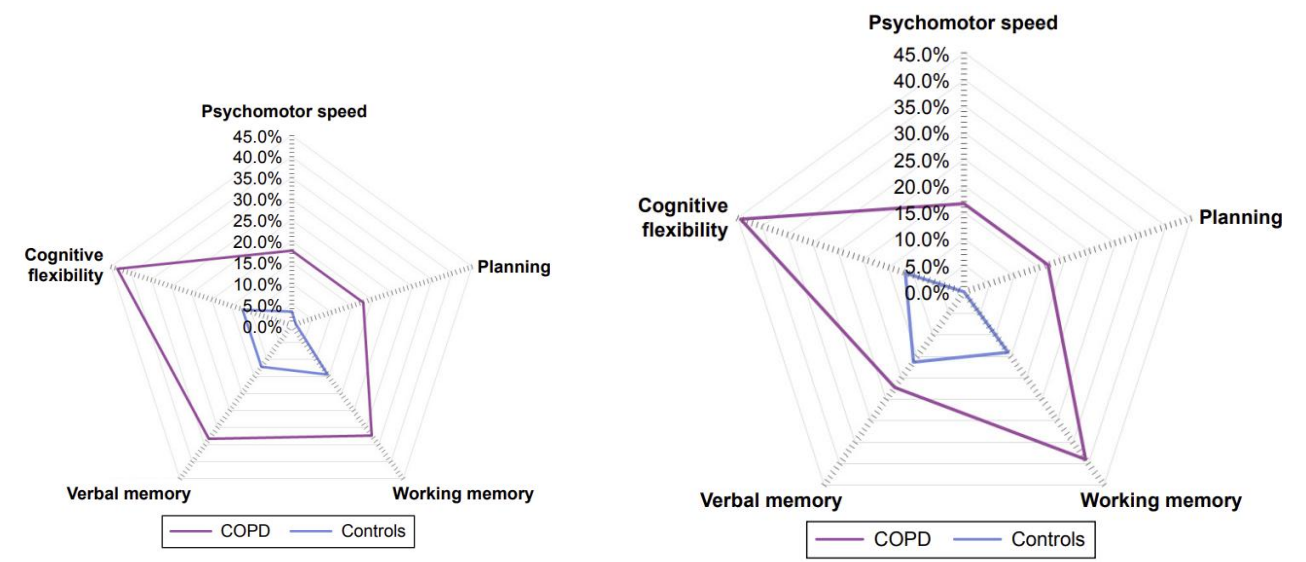
Fig. 2. Meta-analysis for studies with cognitive impairment and MCI in patients with COPD.

Klein M, et al. Impact of chronic obstructive pulmonary disease (COPD) on attention functions. *Respir Med.* 2010

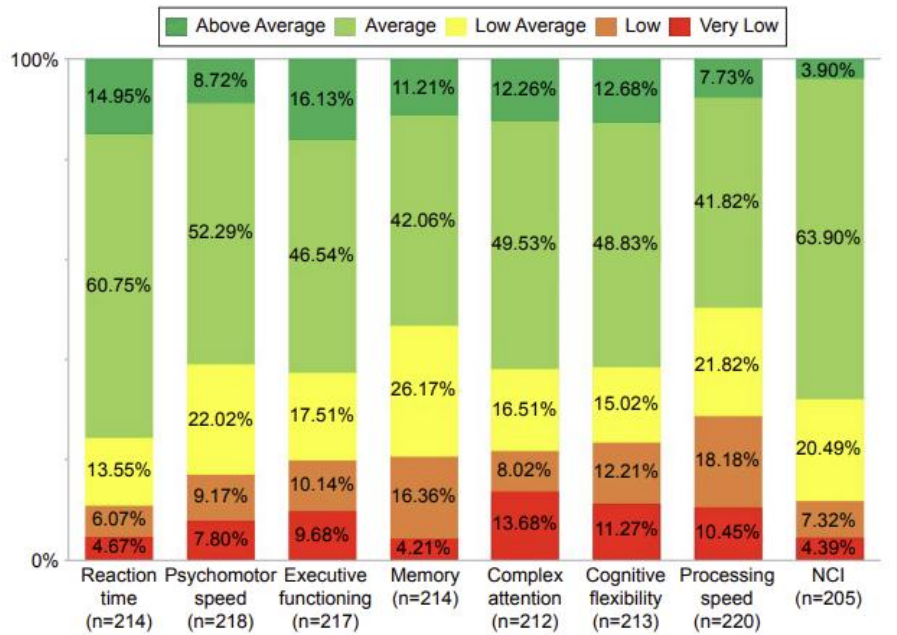
Dodd JW et al. Cognitive function in COPD. *Eur Respir J.* 2010

Cleutjens FA, et al. Domain-specific cognitive impairment in patients with COPD and control subjects. *Int J Chron Obstruct Pulmon Dis.* 2016

Yohannes AM et al. Cognitive Impairment in Chronic Obstructive Pulmonary Disease and Chronic Heart Failure: A Systematic Review and Meta-analysis of Observational Studies. *J Am Med Dir Assoc.* 2017



Prévalence de
25 %



COGNITION ET BPCO

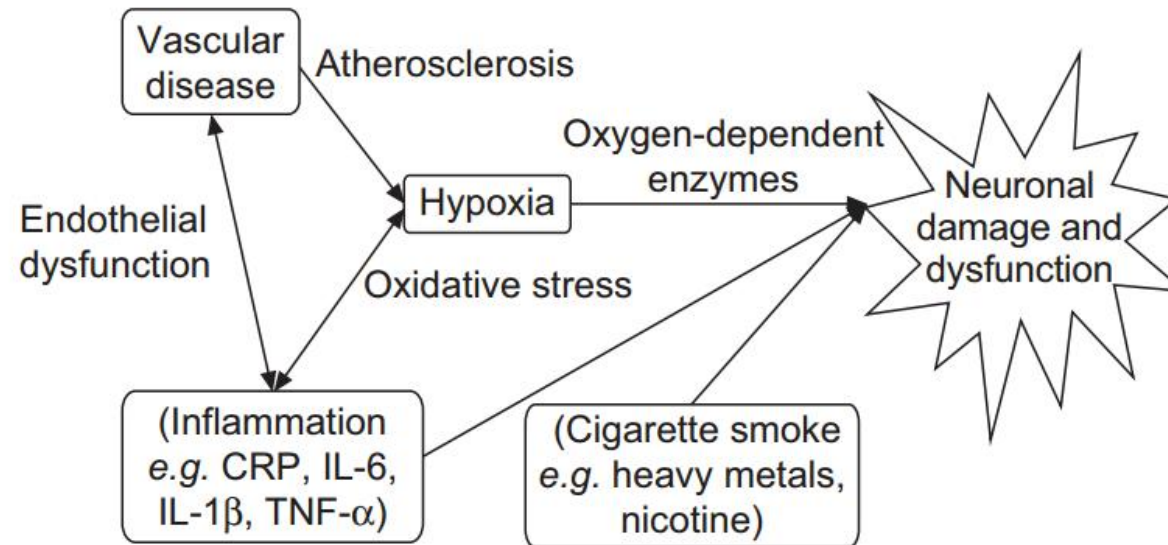


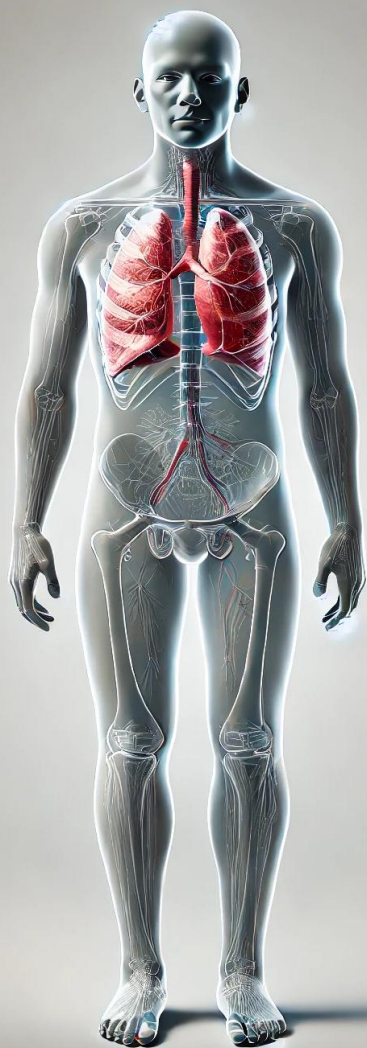
FIGURE 1. Possible mechanisms contributing to neuronal damage in chronic obstructive pulmonary disease. CRP: C-reactive protein; IL: interleukin; TNF: tumour necrosis factor.

Klein M, et al. Impact of chronic obstructive pulmonary disease (COPD) on attention functions. *Respir Med.* 2010

Dodd JW et al. Cognitive function in COPD. *Eur Respir J.* 2010

Cleutjens FA, et al. Domain-specific cognitive impairment in patients with COPD and control subjects. *Int J Chron Obstruct Pulmon Dis.* 2016

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→ **Prise en charge
MPR**



**RÉADAPTATION
RESPIRATOIRE**



QUELLES ÉVALUATIONS PRÉALABLES

QUELS SONT LES OBJECTIFS DE LA PREMIÈRE CONSULTATION ?

- Y a-t-il une indication ?

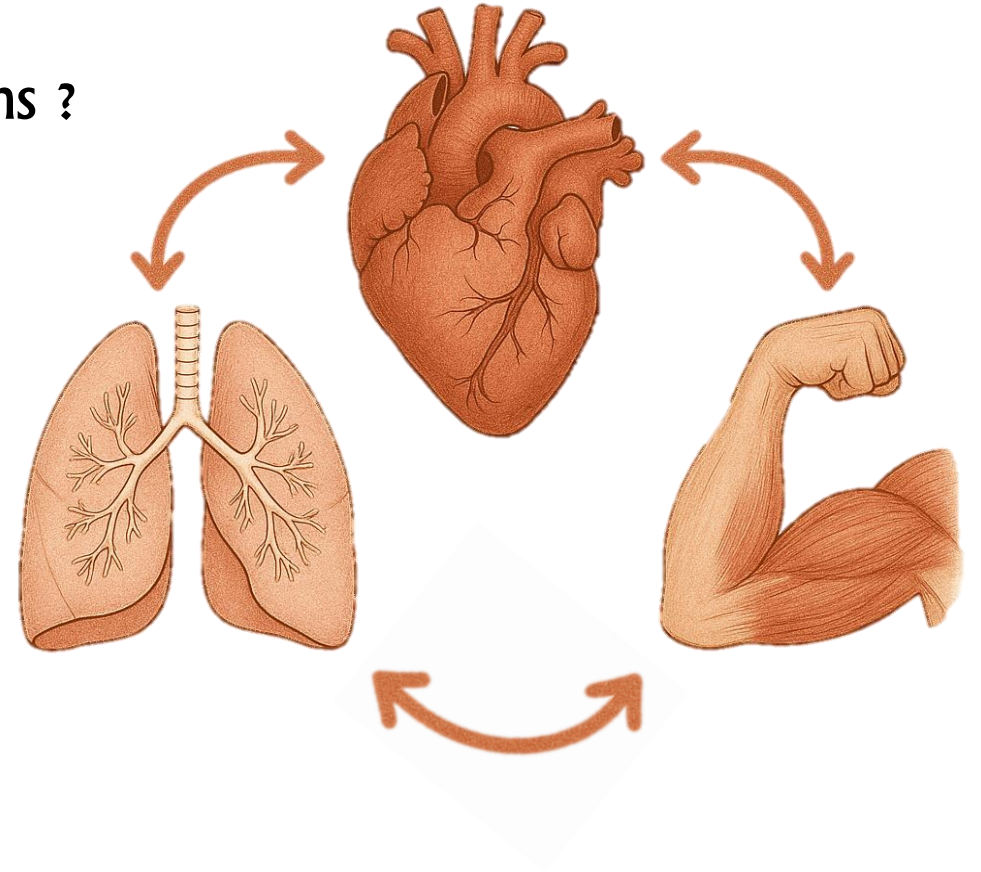
L'inactivité physique et la sédentarité sont des facteurs de risque d'aggravation de la maladie.

L'objectif pour le patient est un changement de comportement à long terme.

Tout patient BPCO ayant une dyspnée d'effort doit être orienté vers une structure de réadaptation respiratoire.

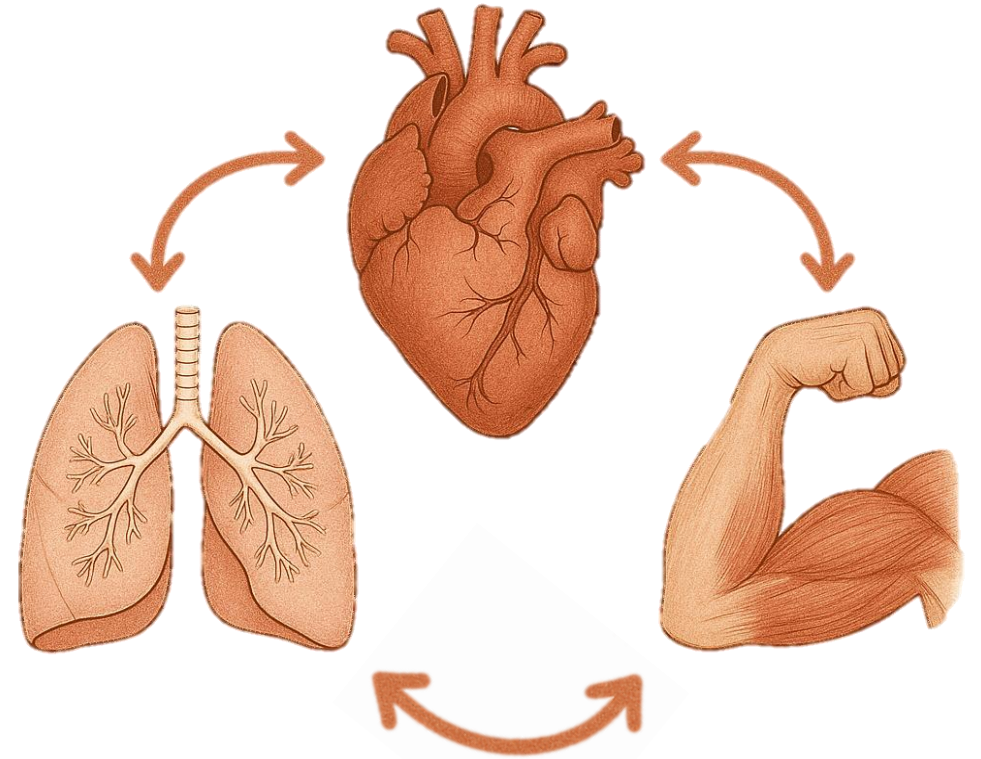
QUELS SONT LES OBJECTIFS DE LA PREMIÈRE CONSULTATION ?

- Existe-t-il d'autre déficience / incapacité / limitations ?
 - Et notamment une atteinte de l'appareil locomoteur
- Existe-t-il un risque cardiologique ?
- A-t-il compris l'intérêt de la prise en charge ?



EVALUATIONS AVANT RÉADAPTATION RESPIRATOIRE

- Quantification de l'atteinte nutritionnelle
 - Poids
 - Habitudes alimentaires
 - Histoire pondérale
- Quantification de l'atteinte respiratoire : mesure de la PIMax ?
- Facteurs limitant à l'effort et niveau de performance : EFX ?



Tunsupon P. The Influence of Body Composition on Pulmonary Rehabilitation Outcomes in Chronic Obstructive Pulmonary Disease Patients. Lung. 2017

Gurgun A, Effects of nutritional supplementation combined with conventional pulmonary rehabilitation in muscle-wasted chronic obstructive pulmonary disease: a prospective, randomized and controlled study. Respiriology. 2013

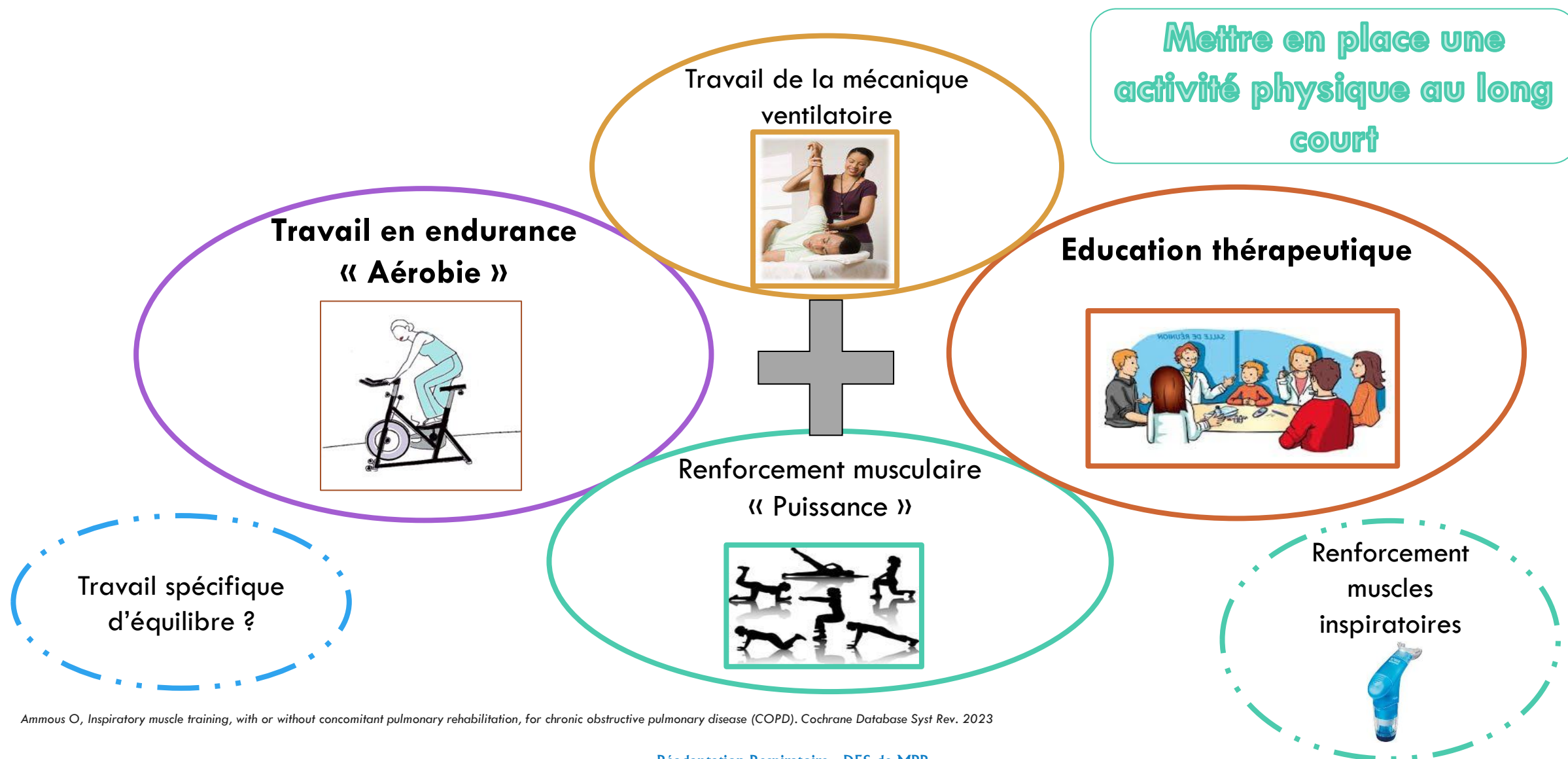
Lattanzi G, Effect of Macronutrients or Micronutrients Supplementation on Nutritional Status, Physical Functional Capacity and Quality of Life in Patients with COPD: A Systematic Review and Meta-Analysis. J Am Nutr Assoc. 2024

Stringer W. The Role of Cardiopulmonary Exercise Testing (CPET) in Pulmonary Rehabilitation (PR) of Chronic Obstructive Pulmonary Disease (COPD) Patients. COPD. 2018

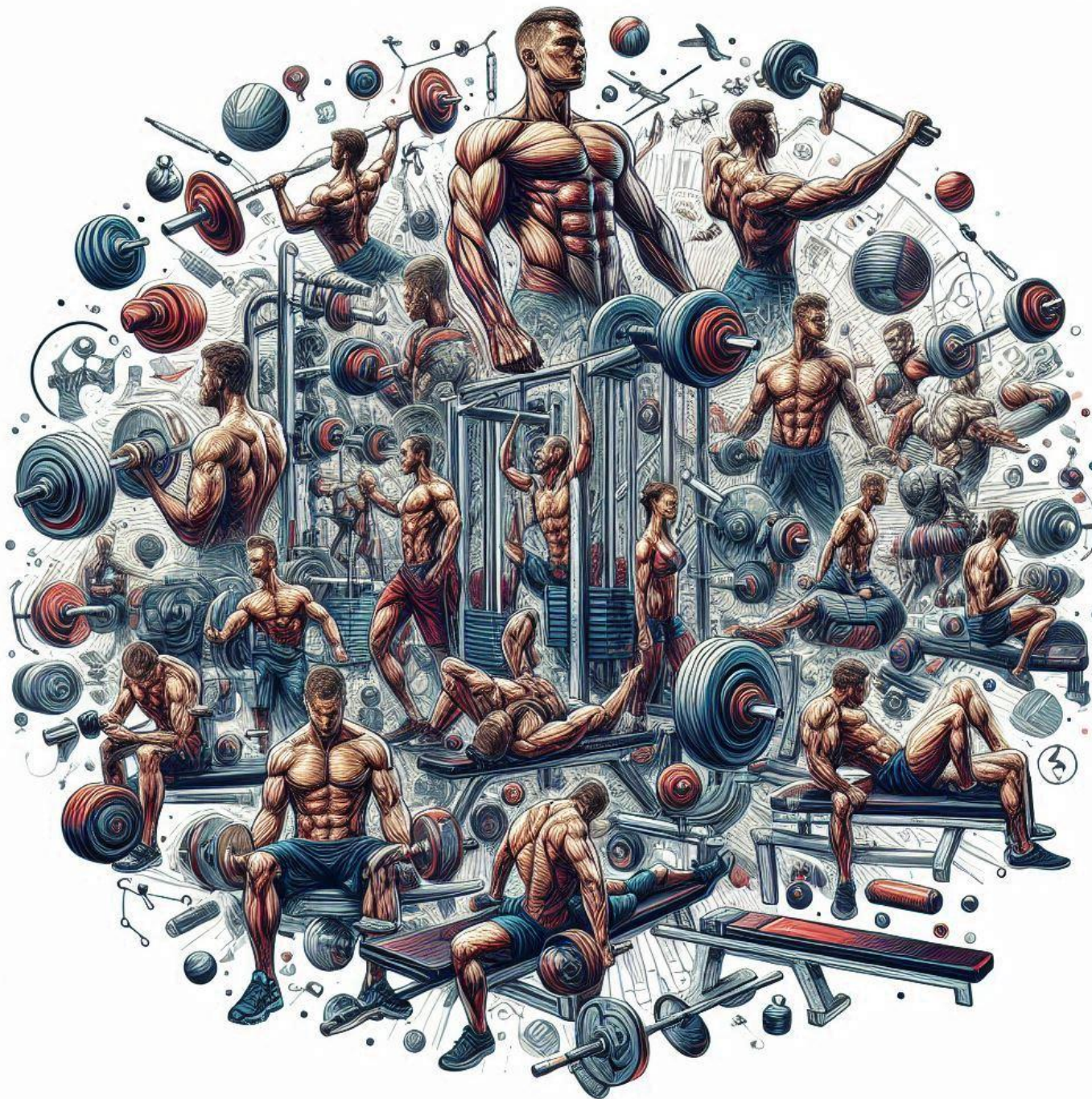


PROGRAMME DE RÉADAPTATION RESPIRATOIRE

COMPOSITION DU PROGRAMME DE SOIN DE ROGER



Ammous O, Inspiratory muscle training, with or without concomitant pulmonary rehabilitation, for chronic obstructive pulmonary disease (COPD). Cochrane Database Syst Rev. 2023

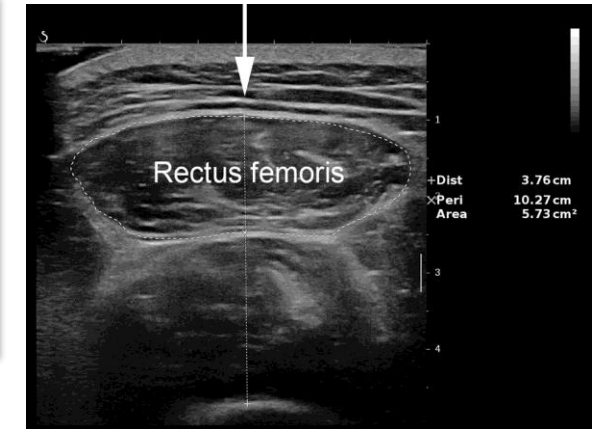


RENFORCEMENT MUSCULAIRE

ÉVALUATION DE LA FORCE MUSCULAIRE

- Mesure quadricipitale

- Force statique avec dynamomètre
- Mesure échographique trophicité musculaire



MDP = 7,5 Nm

- Mesure d'endurance → test de lever de chaise

- Test de lever de chaise sur une minute

+ 5 répétitions = HR mortalité 0,58



Morita AA , Best Protocol for the Sit-to-Stand Test in Subjects With COPD, Respie. Care. 2018

Reychler G, One minute sit-to-stand test is an alternative to 6MWT to measure functional exercise performance in COPD patients, Clin Respir J. 2018

Puhan MA, Simple functional performance tests and mortality in COPD, Eur Respir J 2013

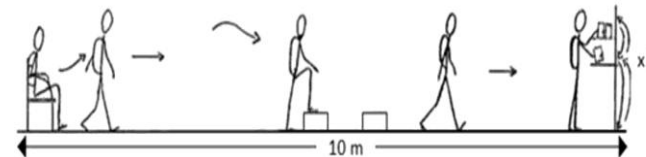
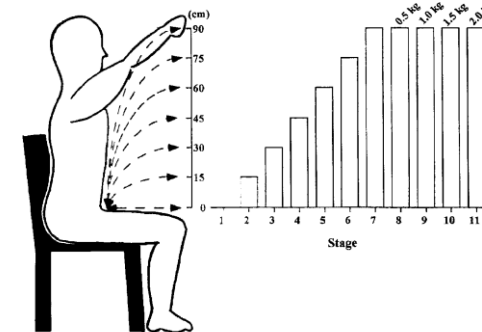
Fonseca J, Handgrip Strength as a Reflection of General Muscle Strength in Chronic Obstructive Pulmonary Disease, COPD 2021

Vaidya T, Determining the minimally important difference in quadriceps strength in individuals with COPD using a fixed dynamometer, Int J Chron Obstruct Pulmon Dis 2018

Deng M, Ultrasound assessment of the rectus femoris in patients with chronic obstructive pulmonary disease predicts poor exercise tolerance: an exploratory study, BMC Pulm Med 2021

ET LES MEMBRES SUPÉRIEURS

- Handgrip + 5 Kg = HR mortalité 0,84
- 6 min pegboard and ring test (6PBRT)
- Unsupported Upper-Limb Exercise Test (UULEX)
- Grocery Shelving test
- Glittre Activities of daily living test



Janaudis-Ferreira T, Relationship and responsiveness of three upper-limb tests in patients with chronic obstructive pulmonary diseases, *Physiother Can* 2013

Hill CJ, Measurement of functional activity in chronic obstructive pulmonary disease: the grocery shelving task, *J Cardiopulm Rehabil Prev* 2008

Janaudis-Ferreira T, How should we measure arm exercise capacity in patients with COPD? A systematic review. *Chest* 2012

Moreira FBR, Replacement of the 6-Min Walk Test With Glittre ADL Test and Scores From the PFSDQ-M and HAP Questionnaires in the BODE Index. *J Cardiopulm Rehabil Prev*. 2018

Gulart AA, The Glittre-ADL Test Cut-Off Point to Discriminate Abnormal Functional Capacity in Patients with COPD, *COPD* 2018

RENFORCEMENT MUSCULAIRE PÉRIPHÉRIQUE

F

Fréquence

I

Intensité

T

Type

T

Temps / durée

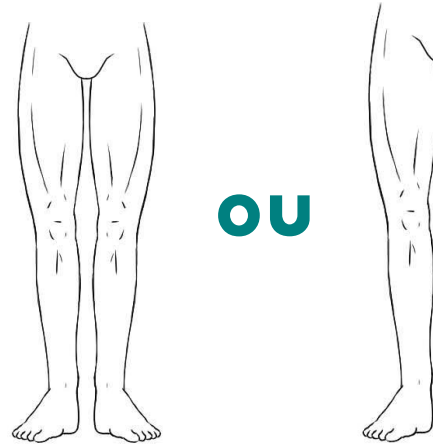
S

Surcharge

RENFORCEMENT MUSCULAIRE PÉRIPHÉRIQUE



OU



OU



OU



OU



Topcuoğlu C, Comparison of the effects of high and low-moderate load lower limb resistance training on muscle strength and exercise capacity in individuals with COPD: A systematic review and meta-analysis. *Heart Lung*. 2024

Nyberg A, Effects of Low-Load/High-Repetition Resistance Training on Exercise Capacity, Health Status, and Limb Muscle Adaptation in Patients With Severe COPD: A Randomized Controlled Trial. *Chest*. 2021

Cheng SWM, Pulmonary Rehabilitation Using Minimal Equipment for People With Chronic Obstructive Pulmonary Disease: A Systematic Review and Meta-Analysis. *Phys Ther*. 2023

Silva BS, Resistance Training With Elastic Tubing Improves Muscle Strength, Exercise Capacity, and Post-Exercise Creatine Kinase Clearance in Subjects With COPD. *Respir Care*. 2019

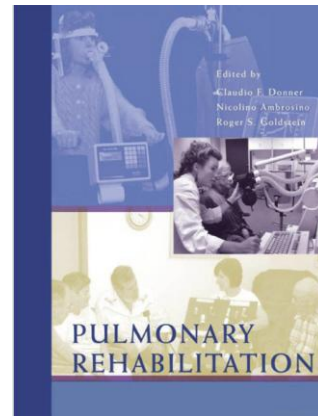
de Lima FF, Elastic Resistance Training Produces Benefits Similar to Conventional Resistance Training in People With Chronic Obstructive Pulmonary Disease: Systematic Review and Meta-Analysis. *Phys Ther*. 2020

McNamara RJ, Water-based exercise training for chronic obstructive pulmonary disease. *Cochrane Database Syst Rev*. 2013

Lau CW, Effect on muscle strength after blood flow restriction resistance exercise in early in-patient rehabilitation of post-chronic obstructive pulmonary disease acute exacerbation, a single blinded RCT. *Chron Respir Dis*. 2023

RENFORCEMENT MUSCULAIRE PÉRIPHÉRIQUE

	Force (ou résistance) ou puissance	Endurance/ Force	Endurance
Fréquence	4-6 jours/sem.	2-4 jours/sem. Maintien 1 à 2x/sem.	2-4 jours/sem.
Intensité	80-90% de la 1 RM	70-85% de la 1 RM	30-60% de la 1 RM
Répétitions	1-3 séries de 1 à 8 répétitions	3 séries de 8 à 12 répétitions	1-3 séries de 10 à 20 répétitions
Période de repos	2-3 minutes	1-2 minutes	1 minute
Progression	2-10% (si 1-2 répétitions suppl.)	Début : 60-70% 1RM	20 séances
Objectifs	Augmentation de la masse musculaire, de la force, de la densité osseuse	Hypertrophie, masse musculaire, force, densité osseuse, endurance	Capacités aérobies et oxydatives, capillarisation, amélioration endurance



RENFORCEMENT MUSCULAIRE PÉRIPHÉRIQUE

F

2 à 3 fois par semaine

I

Adapté à la mesure initiale

T

Force MI – Endurance MS

T

20 séances

S

Selon les symptômes / progression

Principes des techniques physiques

Spécificité des techniques

Effet dose dépendant

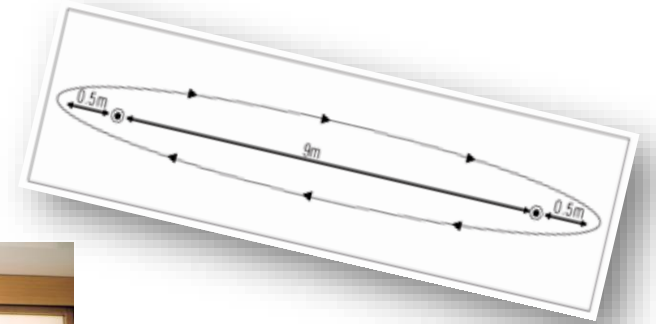
Personnalisation

**Avec
les moyens
du bord !**



TRAVAIL GLOBAL ENDURANT

ADAPTATION CARDIO-RESPIRATOIRE



- EFX avec mesure des échanges gazeux

- Test navette (ISWT)

MCID = 47,5m

- Test d'endurance

MCID = 100s ou + 33%

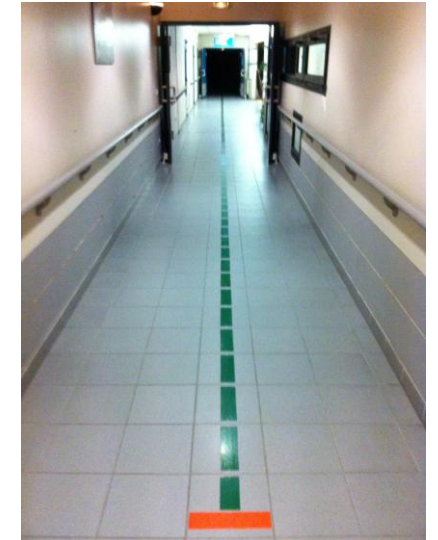
- Test navette (ESWT)

MID = 61s ou 82m

- Test de 6 minutes de marche

MCID 25 à 33m

- Attention effet d'apprentissage 24-29m



Holland AE, , An official European Respiratory Society/American Thoracic Society Technical Standard: field walking tests in chronic respiratory disease, Eur Respir J 2014
Borel B, Prospective validation of the endurance shuttle walking test in the context of bronchodilation in COPD, Eur Respir J 2014
Kon SSC, The 4-metre gait speed in COPD: responsiveness and minimal clinically important difference, Eur Respir J 2014
Pueño-Maestu L, Clinical relevance of constant power exercise duration changes in COPD, Eur Respir J 2009

TRAVAIL GLOBAL ENDURANT

- Fréquence efficace ? → minimum 3 x/semaine

- Intensité efficace ?

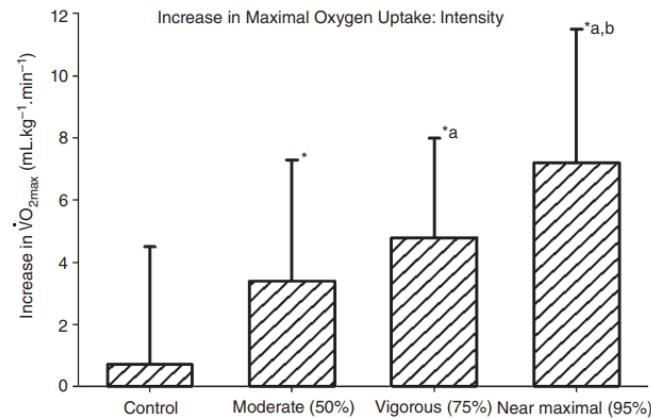
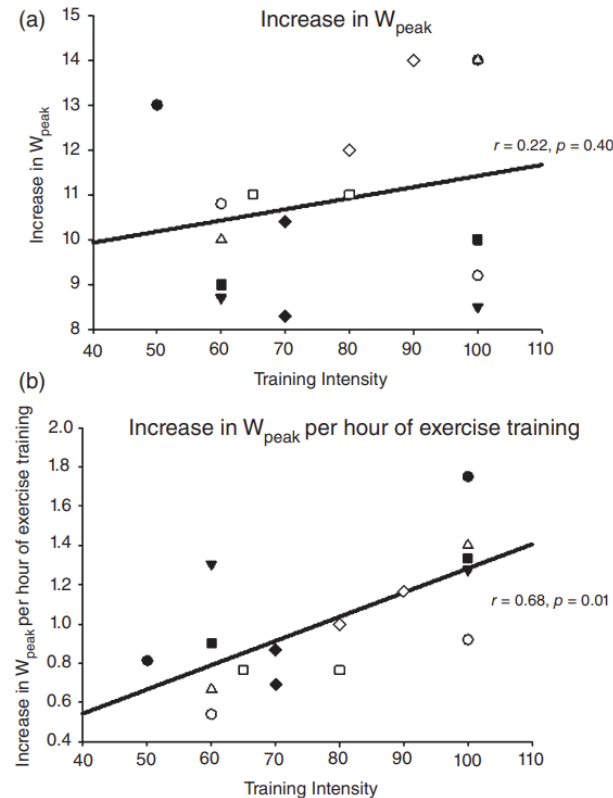


Figure 2 Increase in maximal oxygen uptake ($\dot{V}O_{2max}$) as a function of training intensity. * $P < 0.05$ versus baseline; ^a $P < 0.05$ versus control; ^b $P < 0.05$ versus control and moderate (Reproduced from Gormley *et al.*,¹⁷ with permission).



Intensité
Selon les symptômes : 4 à 6 /10
 OU
au SV1
 OU
à la FC de test de 6 min de marche

Garvey C, et al. Pulmonary Rehabilitation Exercise Prescription in Chronic Obstructive Pulmonary Disease: Review of Selected Guidelines: AN OFFICIAL STATEMENT FROM THE AMERICAN ASSOCIATION OF CARDIOVASCULAR AND PULMONARY REHABILITATION. J Cardiopulm Rehabil Prev. 2016.

Spruit MA et al. ATS/ERS Task Force on Pulmonary Rehabilitation. An official American Thoracic Society/European Respiratory Society statement: key concepts and advances in pulmonary rehabilitation. Am J Respir Crit Care Med. 2013

Morris NR et al.. Exercise training in COPD: What is it about intensity? Respirology. 2016

Fabre C et al. Relationships between heart rate target determined in different exercise testing in COPD patients to prescribed with individualized exercise training. Int J Chron Obstruct Pulmon Dis. 2017

TRAVAIL GLOBAL ENDURANT

- Type : continue ou interval training ?

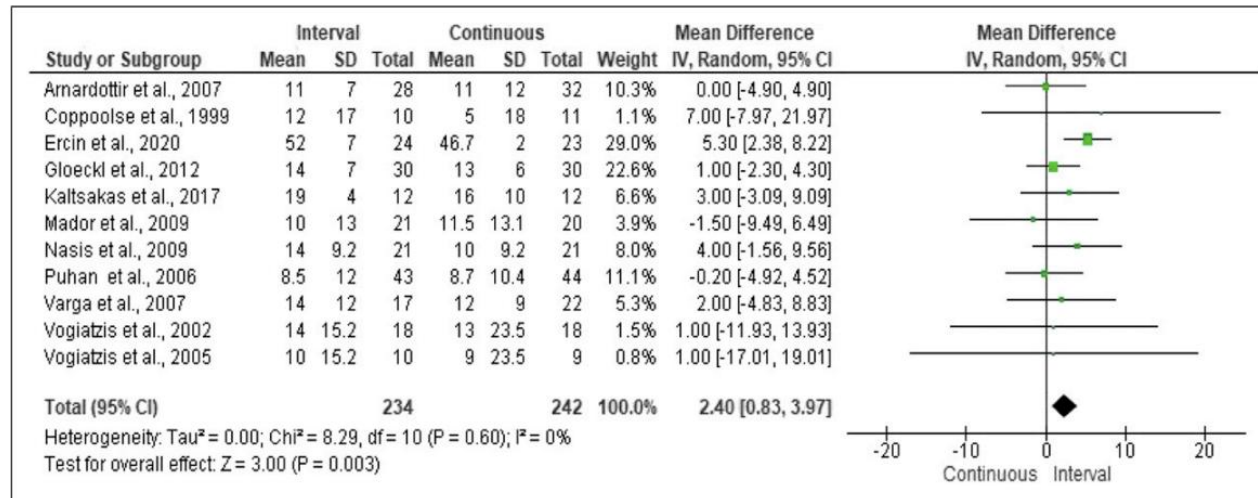


Figure 2. Comparison of the effect of IET versus CET on peak work rate (WR_{peak}) in Watts.

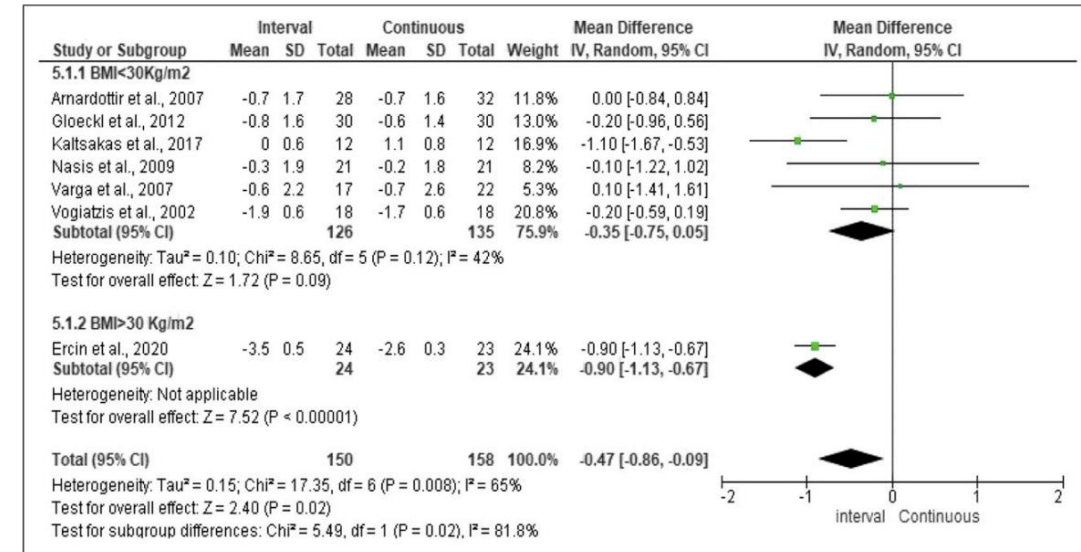
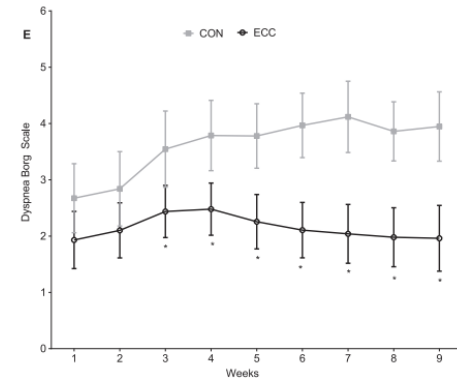
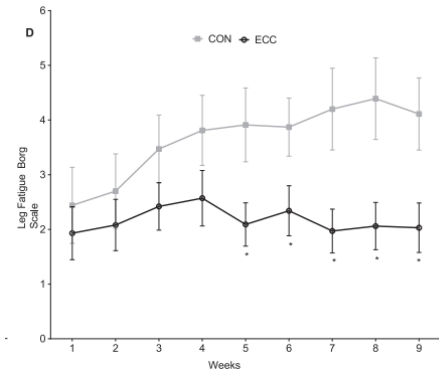
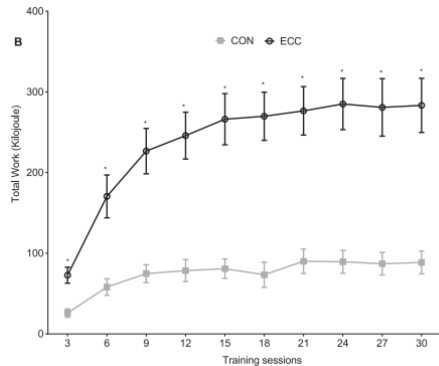


Figure 3. Comparison of the effect of IET versus CET on dyspnoea (Borg's scale CR 0–10). Subgroup analysis by BMI (<30 kg/m²).

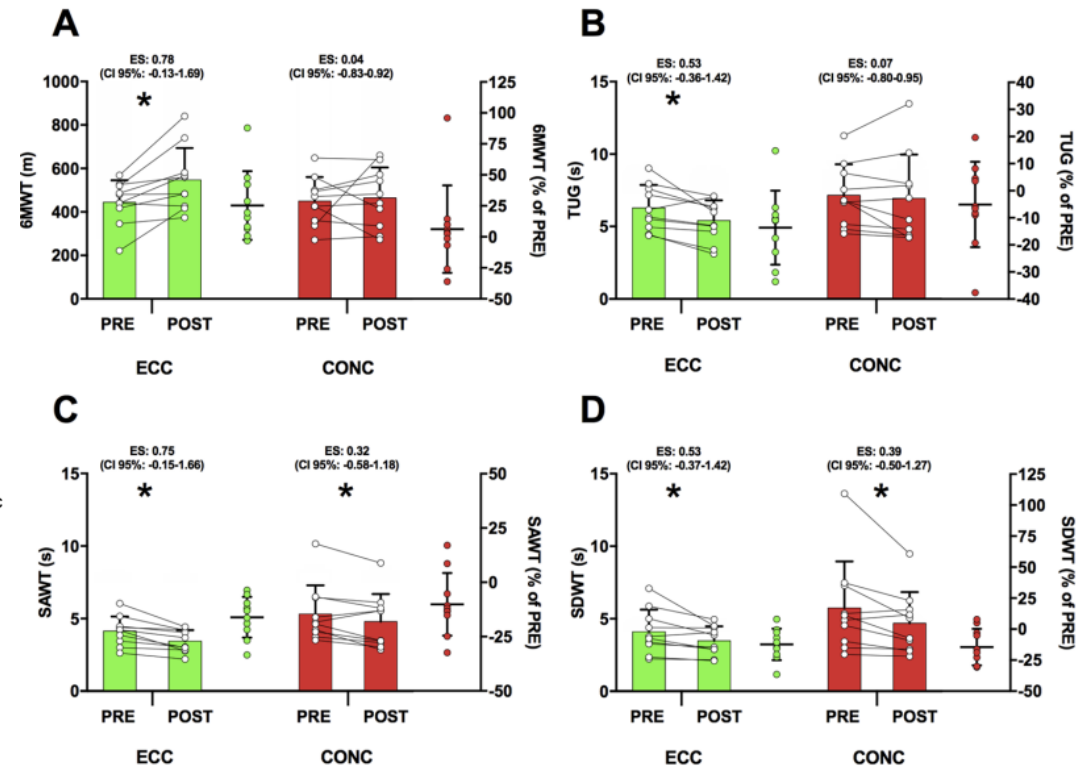
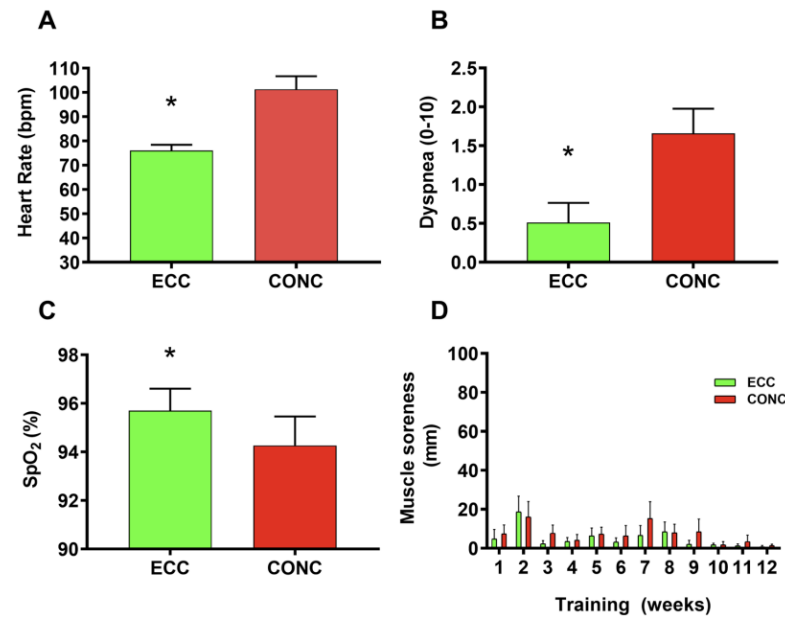
CONCENTRIQUE VS EXCENTRIQUE



Ward et al. Chest 2021

Travail plus important à un même seuil ventilatoire

Mais moindre stimulation cardiopulmonaire et métabolique



Ward TJC, Submaximal Eccentric Cycling in People With COPD: Acute Whole-Body Cardiopulmonary and Muscle Metabolic Responses. *Chest*. 2021.

Nahmias O, Ventilatory adaptation during eccentric cycling in patients with severe COPD: Potential implications for exercise training. *Respir Physiol Neurobiol*. 2021.

Bourdeau J, Eccentric versus conventional cycle training to improve muscle strength in advanced COPD: A randomized clinical trial. *Respir Physiol Neurobiol*. 2020

Inostroza M, Effects of eccentric vs concentric cycling training on patients with moderate COPD. *Eur J Appl Physiol*. 2022

TRAVAIL GLOBAL ENDURANT

F

3 à 5 fois par semaine

I

Seuil de dyspnée ou FC au TD6M ou SV1

T

Endurance ? Interval Training ?

T

Au moins 20 à 60 min

S

Selon la dyspnée ou la FC



ET L'OXYGÈNE DANS TOUT ÇA ?

NONOYAMA M, OXYGEN THERAPY DURING EXERCISE TRAINING IN CHRONIC OBSTRUCTIVE PULMONARY DISEASE. COCHRANE DATABASE OF SYSTEMATIC REVIEWS 2007

SPIELMANN M, EFFECTS OF OXYGEN SUPPLY DURING TRAINING ON SUBJECTS WITH COPD WHO ARE NORMOXEMIC AT REST AND DURING EXERCISE: A BLINDED RANDOMIZED CONTROLLED TRIAL. RESPIR CARE. 2015

BRANSON RD. OXYGEN THERAPY IN COPD. RESPIR CARE. 2018

CHEN X, EFFICACY OF RESPIRATORY SUPPORT THERAPIES DURING PULMONARY REHABILITATION EXERCISE TRAINING IN CHRONIC OBSTRUCTIVE PULMONARY DISEASE PATIENTS: A SYSTEMATIC REVIEW AND NETWORK META-ANALYSIS. BMC MED. 2024

OXYGÉNOTHÉRAPIE

- Indication

- Au repos :

- BPCo + $PaO_2 < 55$
 - BPCO + 60 mmHg + signes cliniques d'hypoxie tissulaire

- De déambulation :

- TD6m ou EFX :
 - Baisse de $PaO_2 < 60$ ou baisse de SpO_2 d'au moins 5% et $>90\%$

- Répondeurs :

- Patients les moins sévère

- Réglage :

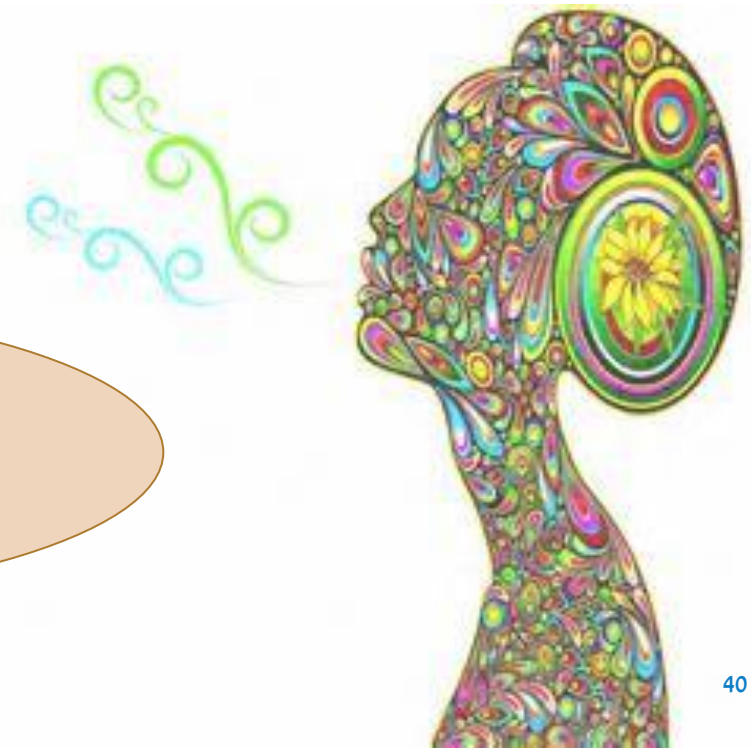
- Saturation $\geq 90\%$

VNI : si
hypercapniques

Saturation

$SpO_2 \geq 95\% \rightarrow PaO_2 > 60-70$
mmHg

$SpO_2 \leq 95\% \rightarrow PaO_2 < 60\text{mmHg}$



PRÉVENTION DES CHUTES

- Pensez à l'évaluer !
- Programme de réadaptation respiratoire
 - Amélioration des performances musculaires
 - Amélioration de l'endurance cardiorespiratoire
 - Amélioration des capacités attentionnelles ?
- Travail spécifique fonctionnel



Balance Evaluation Systeme Test (BESTest)

ICC interrater 0,85 ; intrarater 0,88
sensitivity 81% , specificity 73%
MDC₉₅ 6,3

Brief BESTest

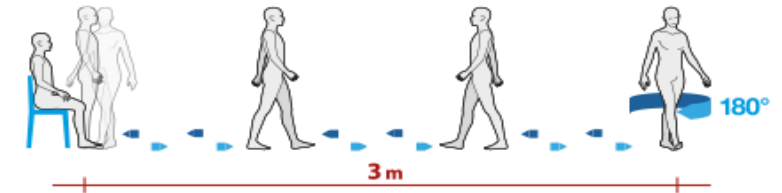
ICC interrater 0,97 ; intrarater 0,82
Cutt off 16,5
MDC95 4,9
sensitivity 81% , specificity 73%

Berg Balance scale

ICC interrater 0,94 ; intrarater 0,52
sensitivity 73% , specificity 77%
More studies needed
MDC 3,5 to 6.2 ?

TUG

ICC 0,94
MDC 1,84s



Chauvin S, Which balance subcomponent distinguish between fallers and non-fallers in people with COPD Int Journal of Chronic Obst Pulm Dis 2020
Jacome C, Validity, reliability, and ability to identify fall status of the berg balance scale, BESTest, Mini-BESTest, and Brief-BESTest in patients with COPD. Phys Ther 2016
Ozalevil S, Association between disease- related factors and balance and falls among the elderly with COPD: a cross-sectional study. Aging Clin Exp Res 2011
Gloeckl R, Whole-body vibration training versus conventional balance training in patients with severe COPD-a randomized, controlled trial. Respir Res. 2021

ENTRE ÉVALUATION ET THÉRAPEUTIQUE

- Montée d'escaliers
 - Stair climb power test
 - 18 marches
 - Libre



Raig M, Associations of the stair climb power test with muscle strength and functional performance in people with chronic obstructive pulmonary disease: a cross-sectional study . *Phys Ther* 2010
Dubé BP, Stair-Climbing Capacity as a Marker of Improvement Following Pulmonary Rehabilitation . *J Cardiopulm Rehabi Pre* 2017

COGNITION ET BPCO

• Quelles interventions ?

- Le dépister ++
- Amélioration de la qualité du sommeil ?
- Traitement de la dépression ?
- Activité physique ?
- Techniques spécifiques ?

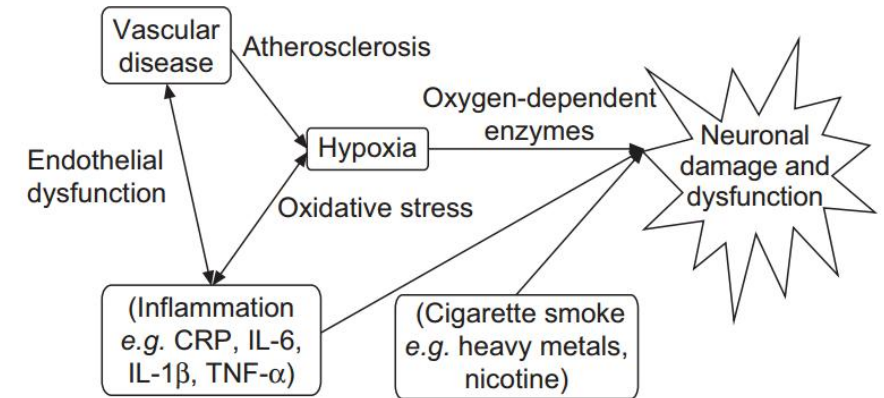
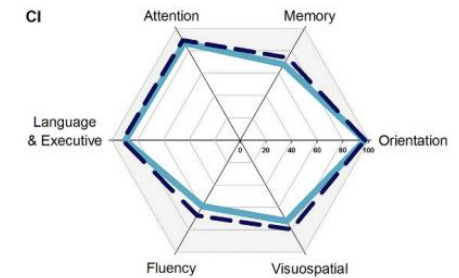
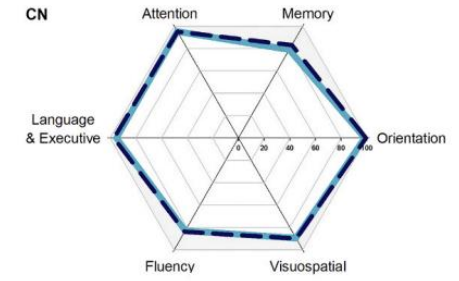
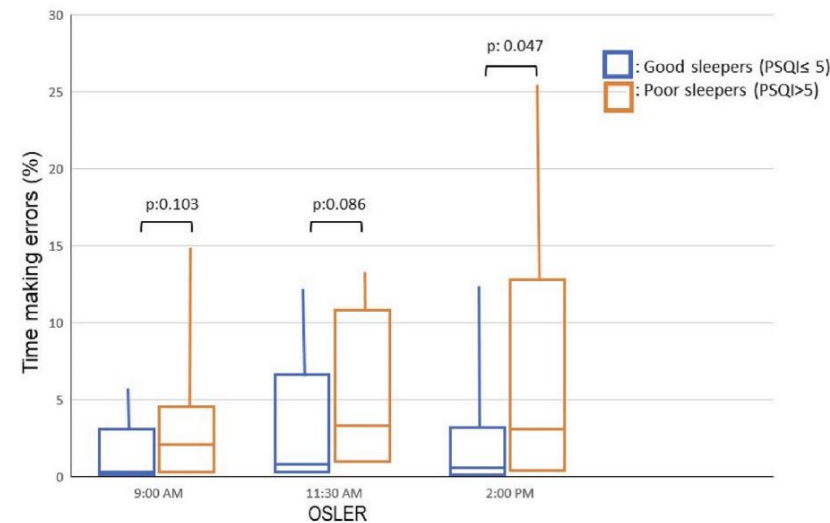


FIGURE 1. Possible mechanisms contributing to neuronal damage in chronic obstructive pulmonary disease. CRP: C-reactive protein; IL: interleukin; TNF: tumour necrosis factor.



Hansen KK, The Association Between Cognitive Functions and Psychological Factors in Patients with Severe COPD. *Int J Chron Obstruct Pulmon Dis.* 2023

Cordani C, Cognitive impairment, anxiety and depression: a map of Cochrane evidence relevant to rehabilitation for people with post COVID-19 condition. *Eur J Phys Rehabil Med.* 2022

Sampol J, Poor sleep is associated with deficits of attention in COPD patients. *Sleep Med.* 2023

Andrianopoulos V, Benefits of pulmonary rehabilitation in COPD patients with mild cognitive impairment - A pilot study. *Respir Med.* 2021

PRISE EN CHARGE NUTRITIONNELLE

- Impédancemétrie hebdomadaire
- Compléments alimentaires
- Vitamines et anti-oxydants

Evaluation de l'état nutritionnel

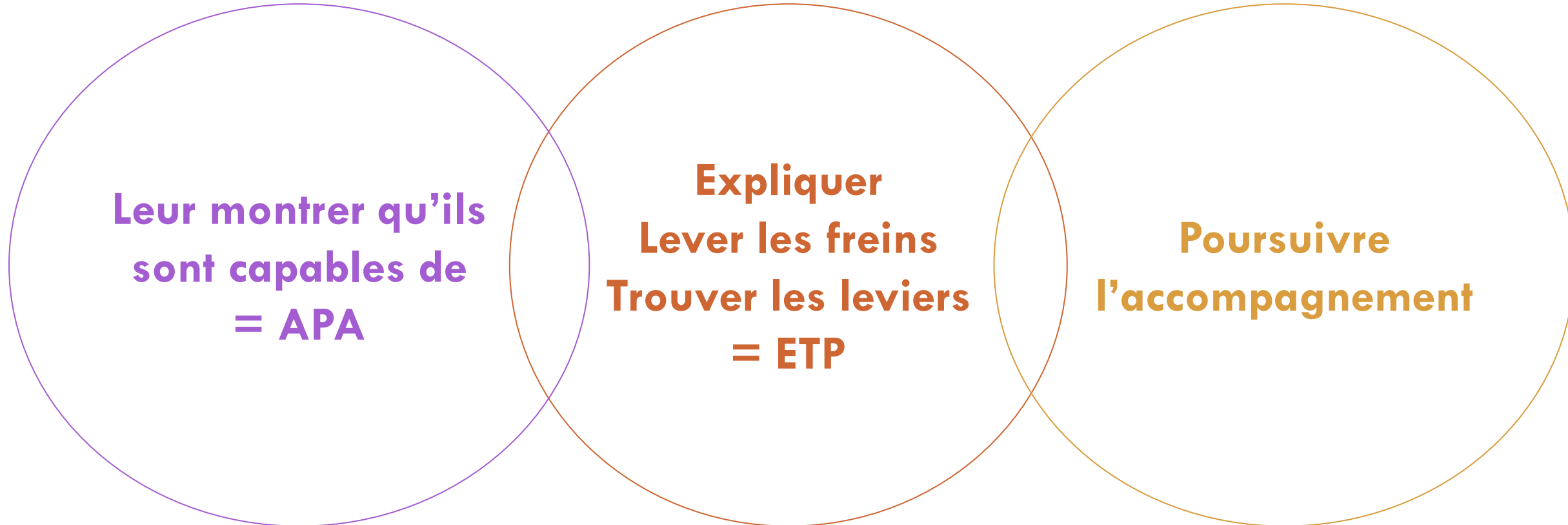
V (date : __/__/__)

Critères de dénutrition :	
☐ BMI < 21 ☐ FFMI < 16 (homme) ou FFMI < 15 (femme) ☐ BMI ≤ 25 et perte de poids > 10% en 6 mois ou > 5% en 1 mois	
Poids actuel :	kg
Poids (il y a 6 mois) :	kg
IMC :	
Perte pondérale :	%
Pli tricipital :	mm
Périmètre abdominal :	cm
Périmètre brachial :	cm
Modification de la prise alimentaire : OUI NON	
Si OUI depuis combien semaines :	
Echelle verbale des ingestas : .../10	
Troubles digestifs : depuis plus de 2 semaines: anorexie, nausées, vomissements, diarrhée	
Vos activités du quotidien ont elles diminué (fatigue, sédentarité) : OUI NON	
Si OUI depuis combien de semaines :	
Besoins estimés (P*35) :	kcal/j (35kcal/kg/jour)
Apports énergétiques oraux estimés :	k
Apports protéiques oraux estimés :	g/j
Si un des trois critères de dénutrition présent donner systématiquement la prescription pour 2 compléments nutritionnels oraux (CNO) hypercaloriques,	
CNO Prescrit :	N° __ / j
Consommé (à la visite suivante) :	N° __ / j
Impédancemétrie : Dépense énergétique estimée : Masse grasse : kg Masse maigre : kg, soit % (Norme masse maigre :) Index de masse maigre : kg/m2 Métabolisme de base : kcal/j	

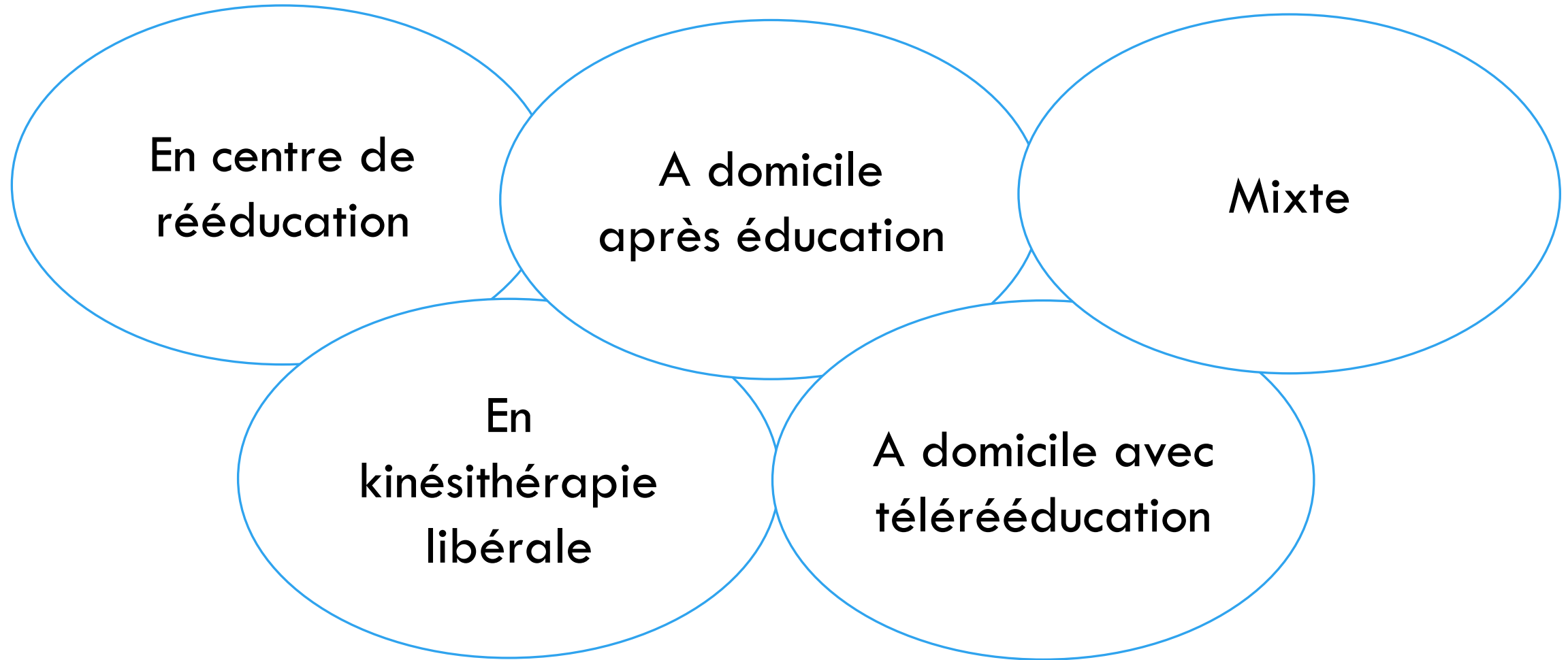
REVENIR À L'OBJECTIF ?

= maintenir une activité physique au long court

= changer les habitudes ...



MODALITÉS D'ADMINISTRATION

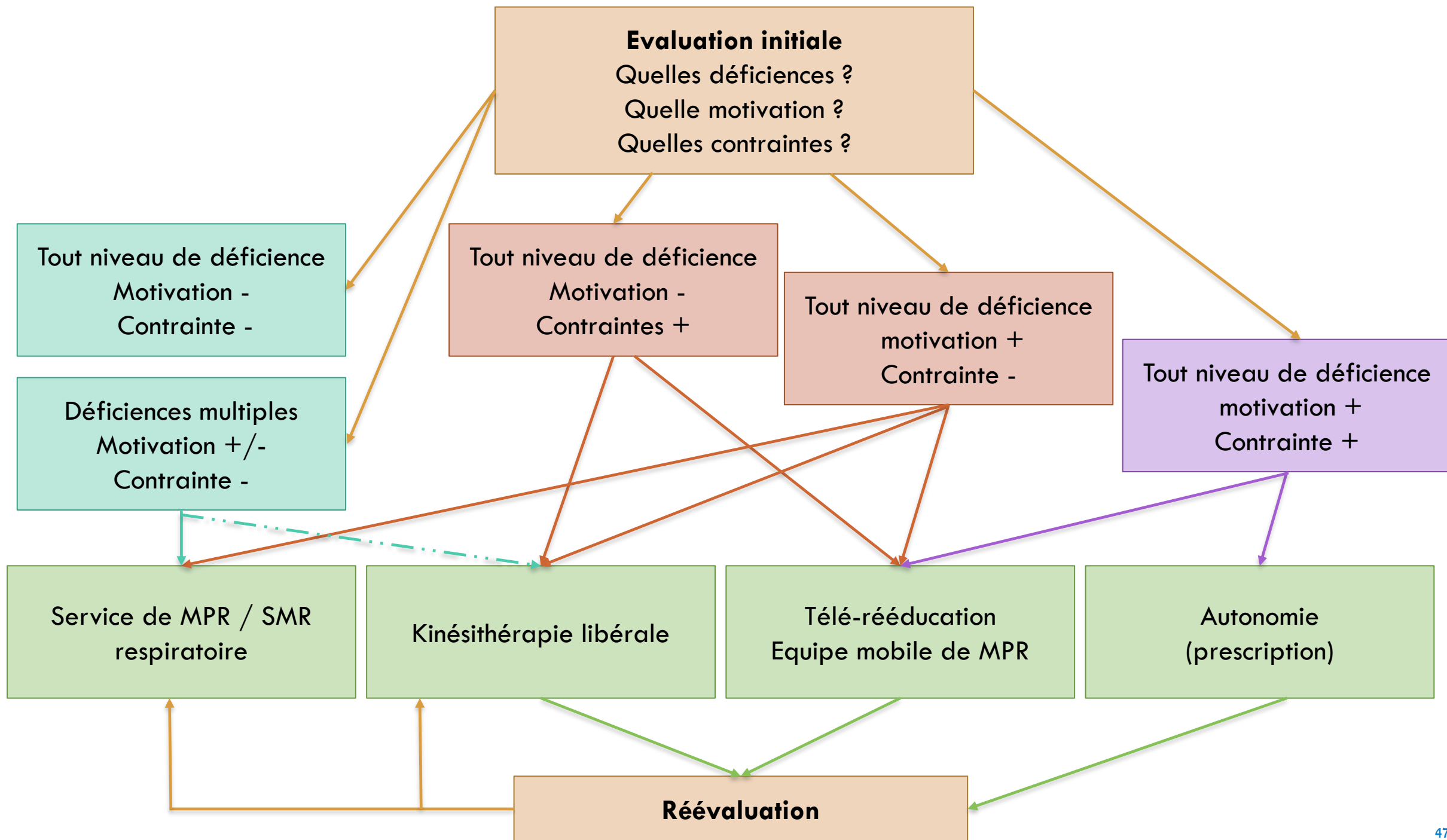


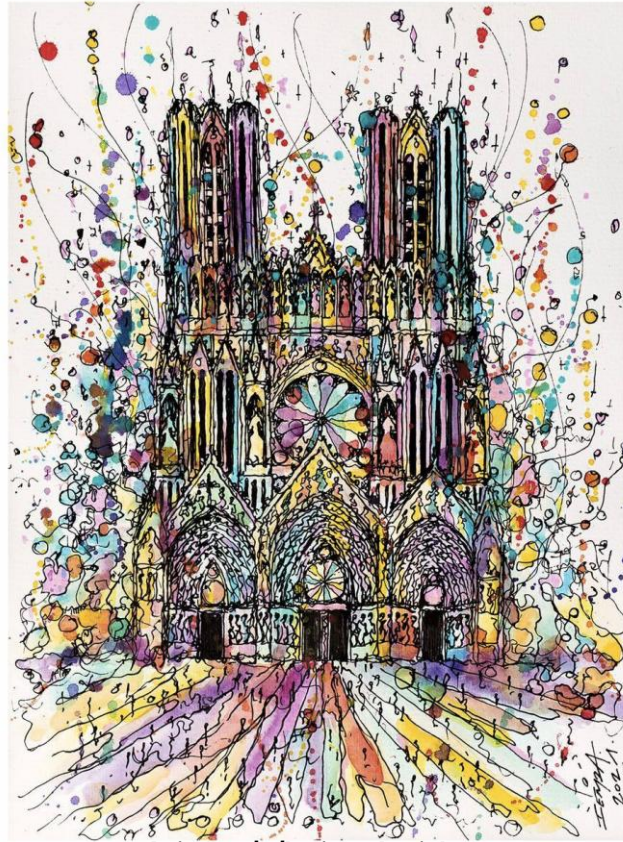
Frei A, Effectiveness of a Long-term Home-Based Exercise Training Program in Patients With COPD After Pulmonary Rehabilitation: A Multicenter Randomized Controlled Trial. Chest. 2022

Kovellis D, Effectiveness and Safety of Supervised Home-Based Physical Training in Patients With COPD on Long-term Home Oxygen Therapy: A Randomized Trial. Chest. 2020

Uzzaman MN, Effectiveness of home-based pulmonary rehabilitation: systematic review and meta-analysis. Eur Respir Rev. 2022

Cox NS, Telerehabilitation for chronic respiratory disease. Cochrane Database Syst Rev. 2021





Peinture de l'artiste rémois lemza

MERCI DE VOTRE ATTENTION

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