Spécificité du Réentraînement à l'Exercice dans l'Asthme

Laurent Jubert

Tours

ASTHME
INTERACTIONS POUMON
ET AUTRES ORGANES
Lille, Grand Palais
du vendredi 30 janvier
au dimanche 1er février 2015

119e congrès de pneumologie
de langue française

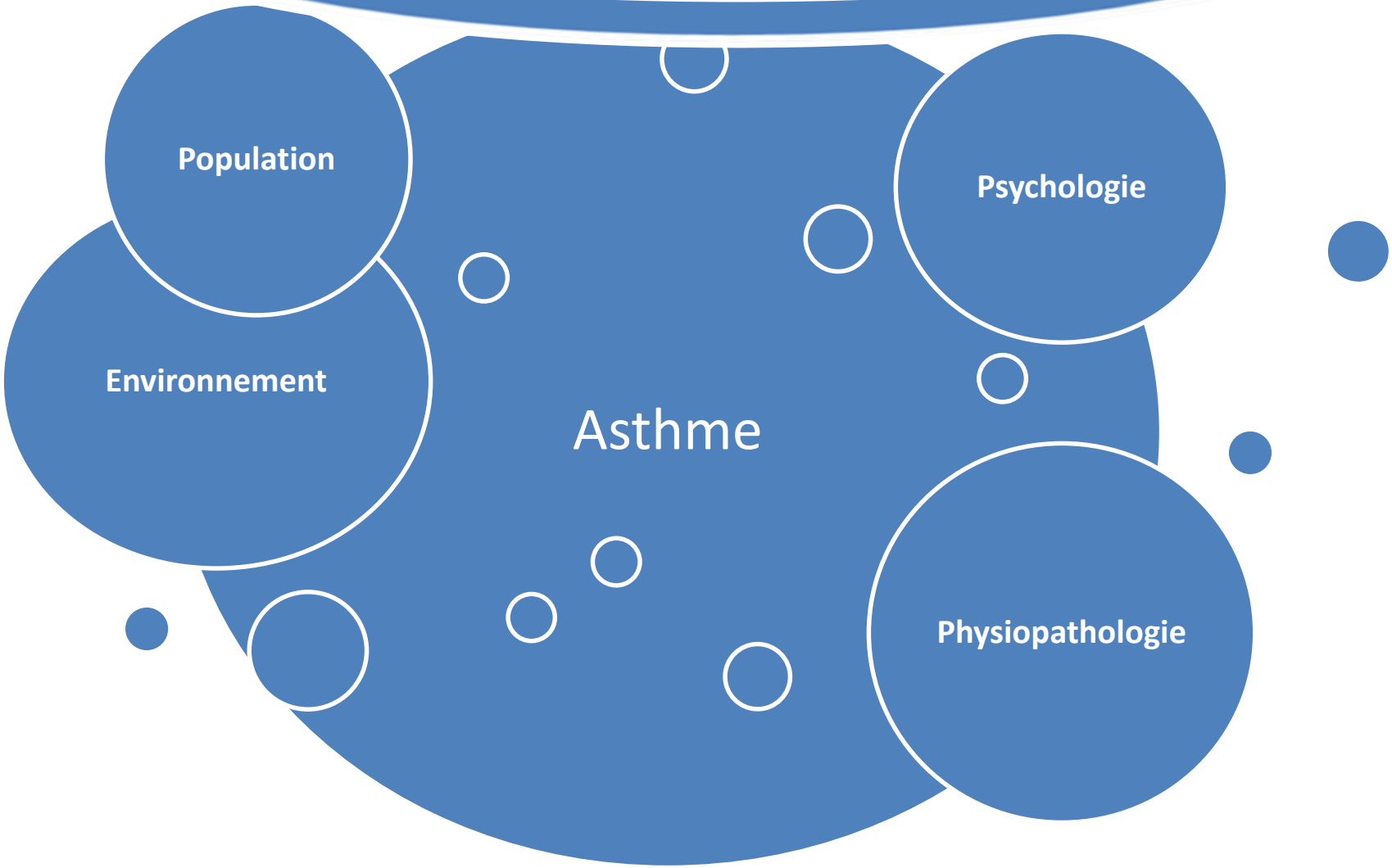
Déclaration de liens d'intérêts

J'ai actuellement, ou j'ai eu au cours des trois dernières années, une affiliation ou des intérêts financiers ou intérêts de tout ordre avec les sociétés commerciales suivantes en lien avec la santé.

ALDEBARAN Santé Développement
AIR Liquide Médical système
ARAIR

Spécificité du Réentraînement à l'Exercice dans l'Asthme

Adaptations du RE à l'Asthme ?

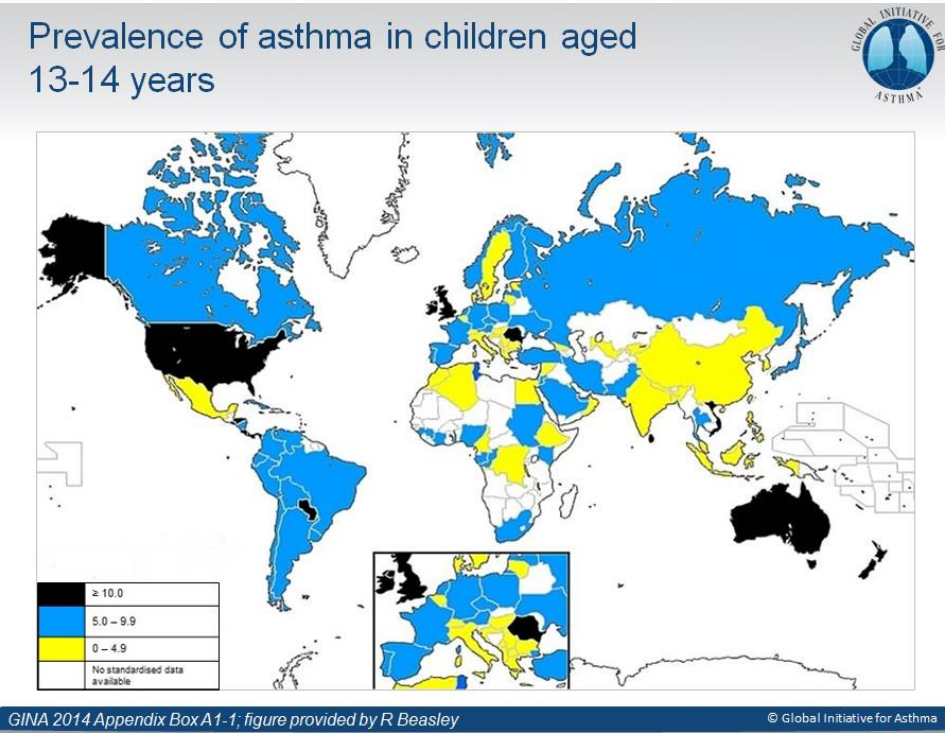


Spécificité de la Population

- Prévalence
- Coûts de santé

- Age
- Niveau socio-économique
- Mortalité précoce
- Niveau d'activité physique

La prévalence augmente
Pessimisme



- Asthma affects 5–16% of people worldwide.
- Rates vary widely in different countries, reflecting differences in prevalence and in diagnostic standards.
- Prevalence increased markedly worldwide during the second half of the 20th century but seems to have plateaued thereafter, particularly in countries with the highest asthma rates, such as the UK.
- An exception is the USA, where
  - asthma prevalence increased from 7·3% to 8·4% between 2001 and 2010,3
  - and continues to mainly affect children, African-Americans, and the poor; 11·2% of people with incomes lower than the poverty level had asthma.

- Martinez FD, Vercelli D. Asthma. Lancet 2013

La prévalence augmente : Pessimisme

- Asthma is the most common chronic disease of childhood.
- Asthma prevalence and incidence have been increasing in children in developed countries during the past few decades.
- Causes for this epidemic are unknown, although changes in frequency and severity of early-life infections, diet, and exposure to indoor allergens and to indoor and outdoor air pollutants have all been linked with asthma.

- McConnell R, Berhane K, Gilliland F, et al. Asthma in exercising children exposed to ozone: A cohort study. Lancet 2002

Coûts de santé

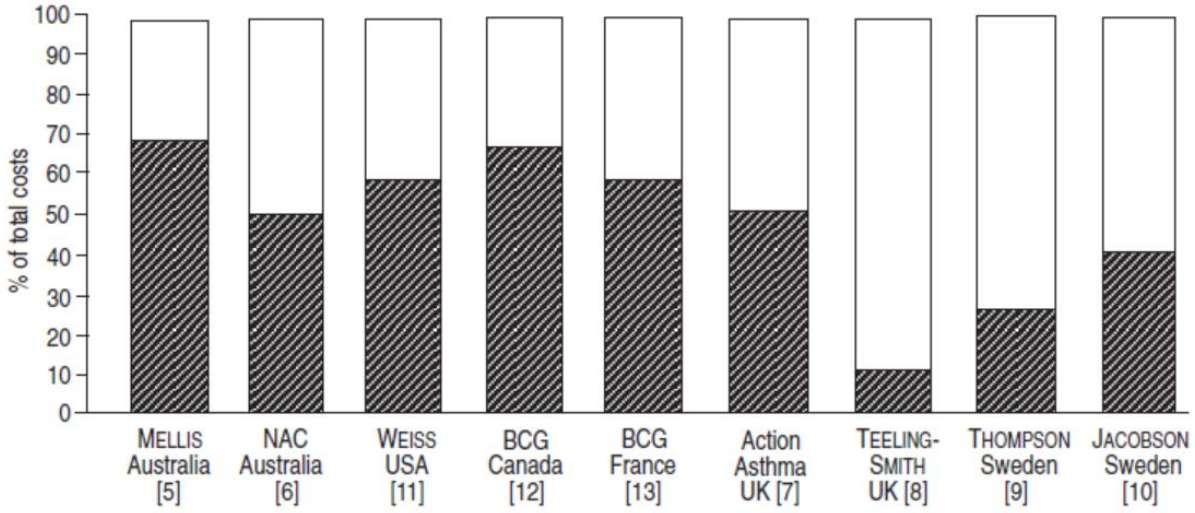


Fig. 1. – Direct and indirect costs of asthma. The first author, country and reference number are given for each study. NAC: National Asthma Campaign; BCG: Boston Consulting Group. ▨ : direct costs; □ : indirect costs.

The costs of asthma are largely due to uncontrolled disease, and are likely to rise as its prevalence and severity increase.
Costs could be significantly reduced if disease control is improved.
A large proportion of the total cost of illness is derived from treating the consequences of poor asthma control.

- Barnes PJ, et al. The costs of asthma. Eur Respir J 1996

Coûts de santé

Le coût moyen annuel est de

- 631 ± 299 euros, 298 euros pour les patients stables
- 1 052 euros pour patients ayant fait au moins une crise
- 3 811 euros pour ceux hospitalisés dans l'année
- 7 millons d’euros annuels pour AT.

Les actions améliorant le contrôle de la maladie en ambulatoire (prévention et gestion des crises) permet une plus importante réduction des coûts moyens que les actions réalisées chez les patients vus aux urgences ou hospitalisés.

- C.Chouaid, et al. Coûts de l'asthme en France : modélisation médico-économique par un modèle de Markov Revue des Maladies Respiratoires Vol 21, N° 3 - juin 2004

Ages

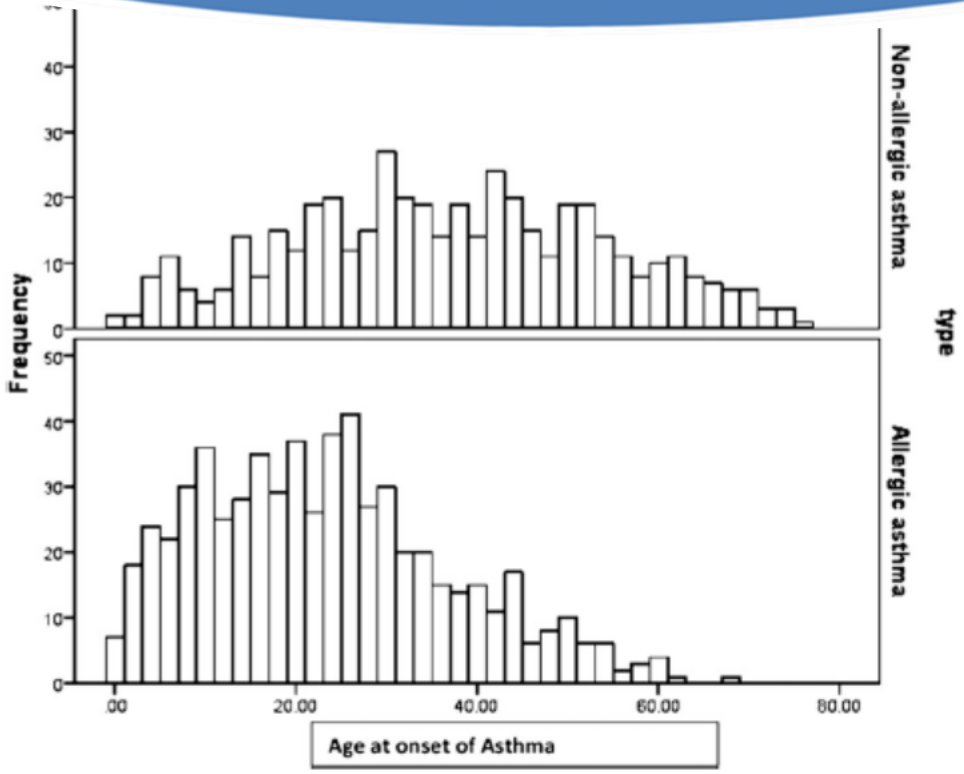


FIGURE 1. Distribution of age at onset of asthma in the cohort of adults classified as having nonallergic (n = 463) and allergic (n = 612) asthma.

- *Zarqa Ali,* et al. Long-term Mortality Among Adults With Asthma A 25-Year Follow-up of 1,075 Outpatients With Asthma CHEST 2013

Niveau socio-économique

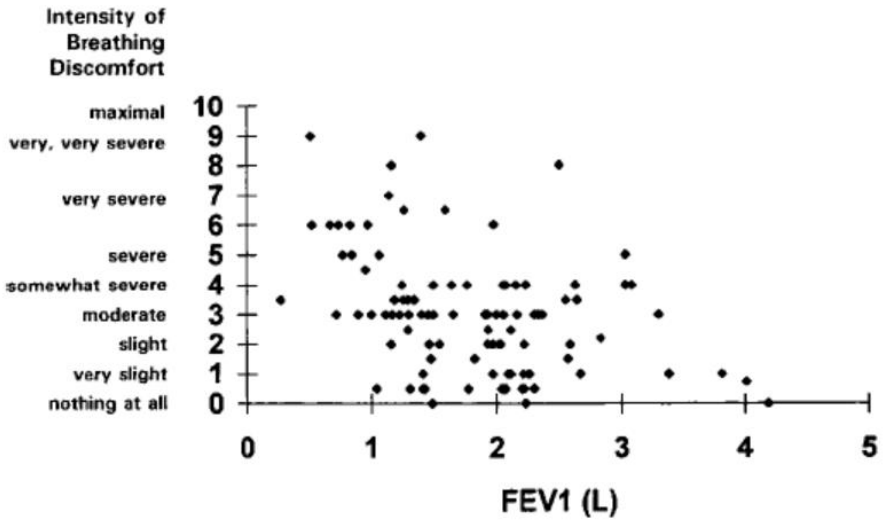
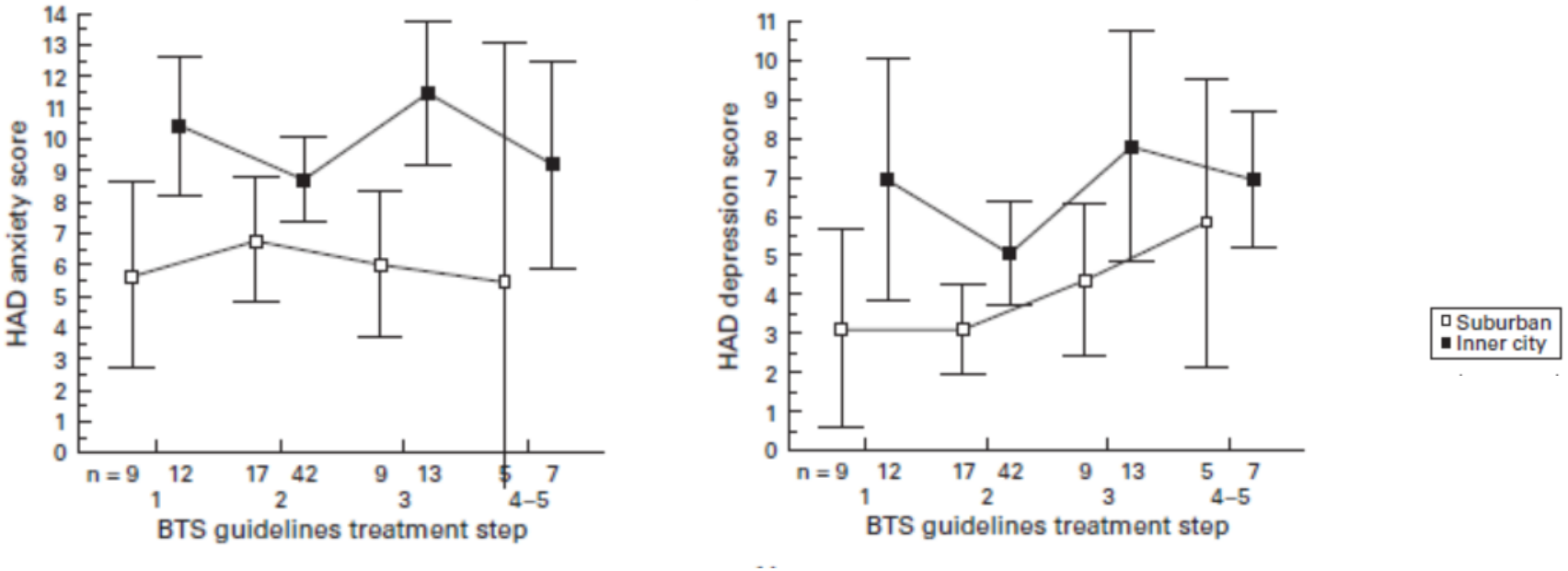


Figure 1. Relationship between FEV_1 and intensity of dyspnea at baseline and during treatment with nebulized albuterol in 25 patients with acute asthma; $r = -0.38$, $p = 0.0001$.

- Attention to the language of dyspnea would alert health care providers to residual air flow obstruction despite decreases in overall dyspnea intensity.
- Asthma-related QoL correlating better with psychosocial factors than lung function or treatment step.

- Moy ML et al. Language of dyspnea in assessment of patients with acute asthma treated with nebulized albuterol. Am J Respir Crit Care Med 1998

Niveau socio-économique



- Rimington LD et al. Relationship between anxiety, depression, and morbidity in adult asthma patients. Thorax 2001

Niveau socio-économique

We should be more aware of the possibility of anxiety and depression in our asthma patients,

Particularly those with less than optimal control and in whom poor adherence and risktaking behaviour is evident.

- Thomas M, et al. Asthma and psychological dysfunction. Prim Care Respir J 2011

Mortalité précoce

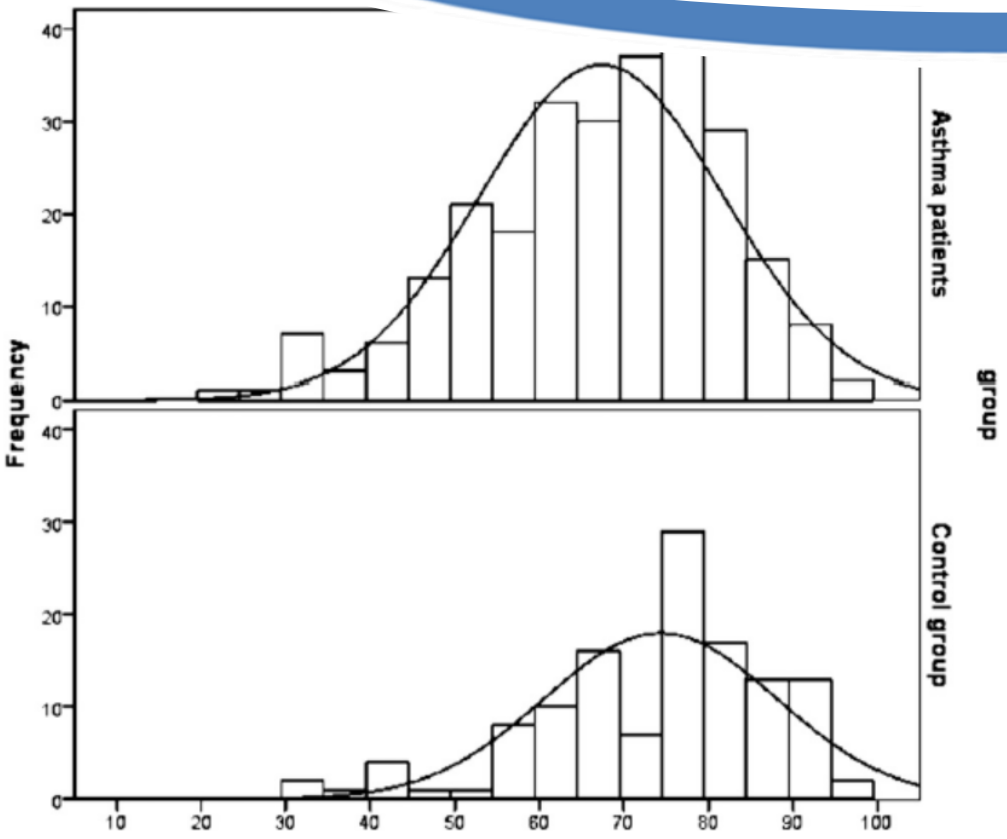


FIGURE 2. Distribution of age at death in patients with asthma and control subjects.

Table 3—*Cause of Death in Asthma (n = 1,075) and Nonasthma Cases (n = 1,075) (Mean Follow-up Time of 25.6 y)*

Cause of Death (ICD-10 Code)	Asthma (n = 1,075)	Nonasthma (n = 1,075)
All causes	261	124
Status asthmaticus (DJ469)	20	0
Obstructive lung disease not classified as status asthmaticus (DJ440-DJ468)	75	10
Cardiovascular disease	54	24
Acute myocardial infarction (DI20)	17	7
Malignant neoplasms	55	21
Lung cancer (DC34)	5	4
Other causes	57	69[a]

- *Zarqa Ali,* et al. Long-term Mortality Among Adults With Asthma A 25-Year Follow-up of 1,075 Outpatients With Asthma CHEST 2013

Mortalité précoce

Fig 1.2 Deaths attributed to asthma. Males and females combined, 20+ years, UK 1979–2011

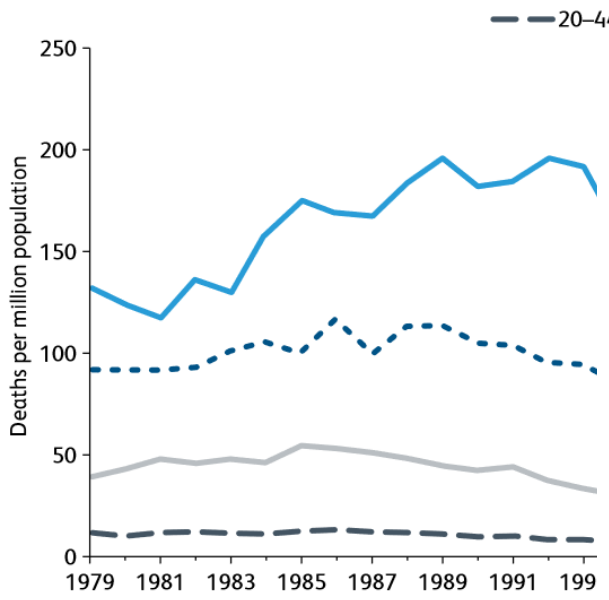
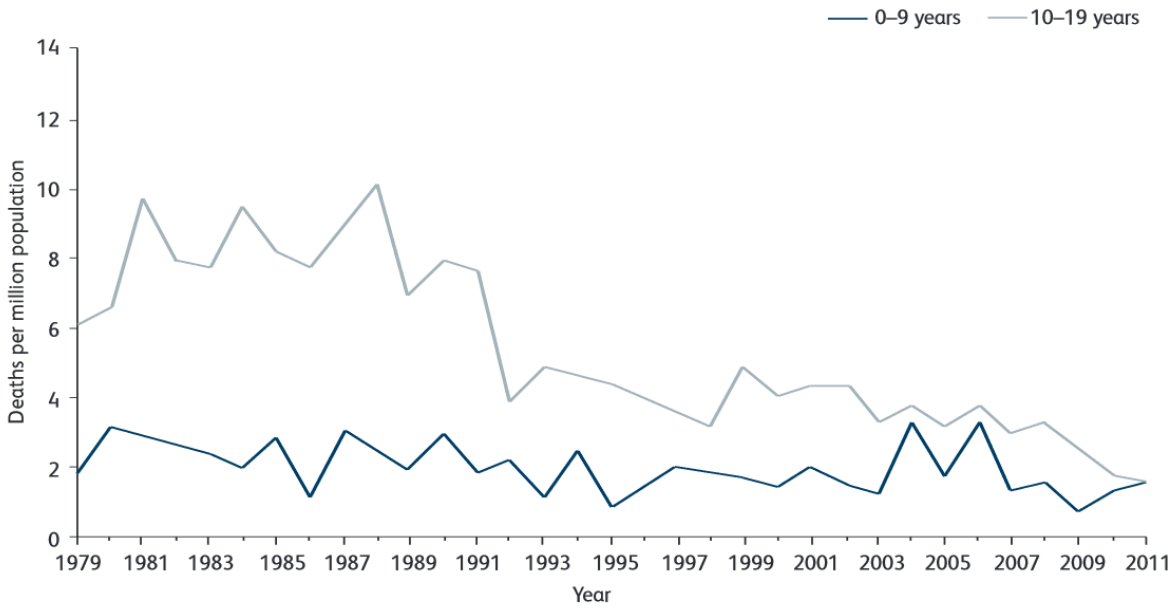


Fig 1.1 Deaths attributed to asthma. Males and females combined, 0–19 years, UK 1979–2011



- Levy M, et al. Why asthma still kills: the National Review of Asthma Deaths (NRAD) Confidential Enquiry report. London: RCP, 2014.

Baisse du niveau d'activité physique

A majority of adults with self-reported asthma living in Nevada are physically inactive.

It appears that physical inactivity is associated with an increased prevalence of asthma.

- Teramoto M, et al. Physical activity participation among adult Nevadans with self-reported asthma.J Asthma 2011 Jun

Baisse du niveau d'activité physique

Inactive patients with asthma were more likely to have an overnight hospital stay (OR, 1.68; 95% CI, 1.31-2.16) and 3 or more physician consultations (OR, 1.23; 95% CI, 1.04-1.46) than active patients with asthma (OR, 1.00).

- Dogra S , Baker J, Ardern CI. The role of physical activity and body mass index in the health care use of adults with asthma. Ann Allergy Asthma Immunol. 2009 Jun

Many patients with difficult asthma reported concerns about their current fitness and most were not exercising at the recommended level.
There appears to be a demand for the development of a community-based structured exercise programme.

- A Singapuri, et al. Self-reported physical activity levels and atttitudes towards a structured exercise programme in adults with dufficult asthma. Thorax 2010

Baisse du niveau d'activité physique

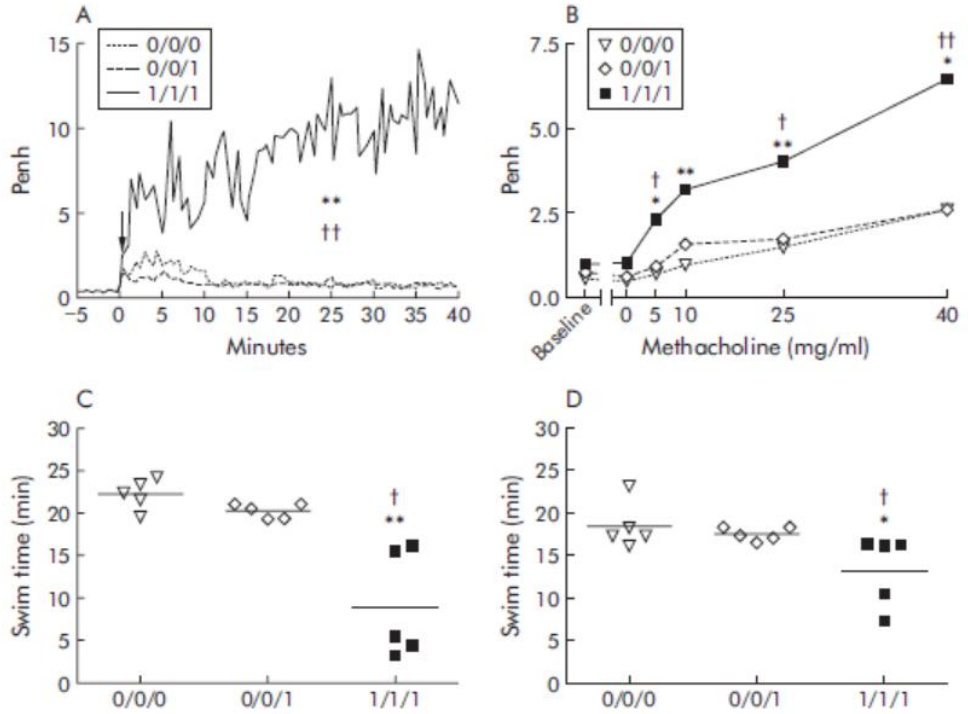


Figure 1 (A) Ventilatory response (Penh) before and after intranasal instillation (arrow) with TDI or vehicle. (B) Methacholine responsiveness (Penh) 24 hours after instillation of TDI or vehicle. (C) Swim test 1 hour after instillation with TDI or vehicle. (D) Swim test 22 hours after instillation with TDI or vehicle. Experimental groups are identified by three symbols. 0 and 1 represent administration of vehicle (acetone:olive oil) or TDI, respectively; the first two symbols identify the agent applied dermally on days 1 and 8, and the third symbol identifies the agent instilled intranasally on day 15. n = 5 per group. †$p<0.05$, ††$p<0.01$ compared with the 0/0/1 control group; *$p<0.05$, **$p<0.01$ compared with the 0/0/0 control group (non-parametric Kruskal-Wallis test, Dunn's multiple comparison post hoc test).

- J A J Vanoirbeek, et al. Reduced exercise capacity in a mouse model of asthma, Thorax 2006

Spécificité de la Population

- Prévalence augmente:
  - **Se préparer à + de patient**.
- Coûts de santé important:
  - **Devoir de dépister**.

- Age: Enfants et population active
- Niveau socio-économique
- Mortalité précoce

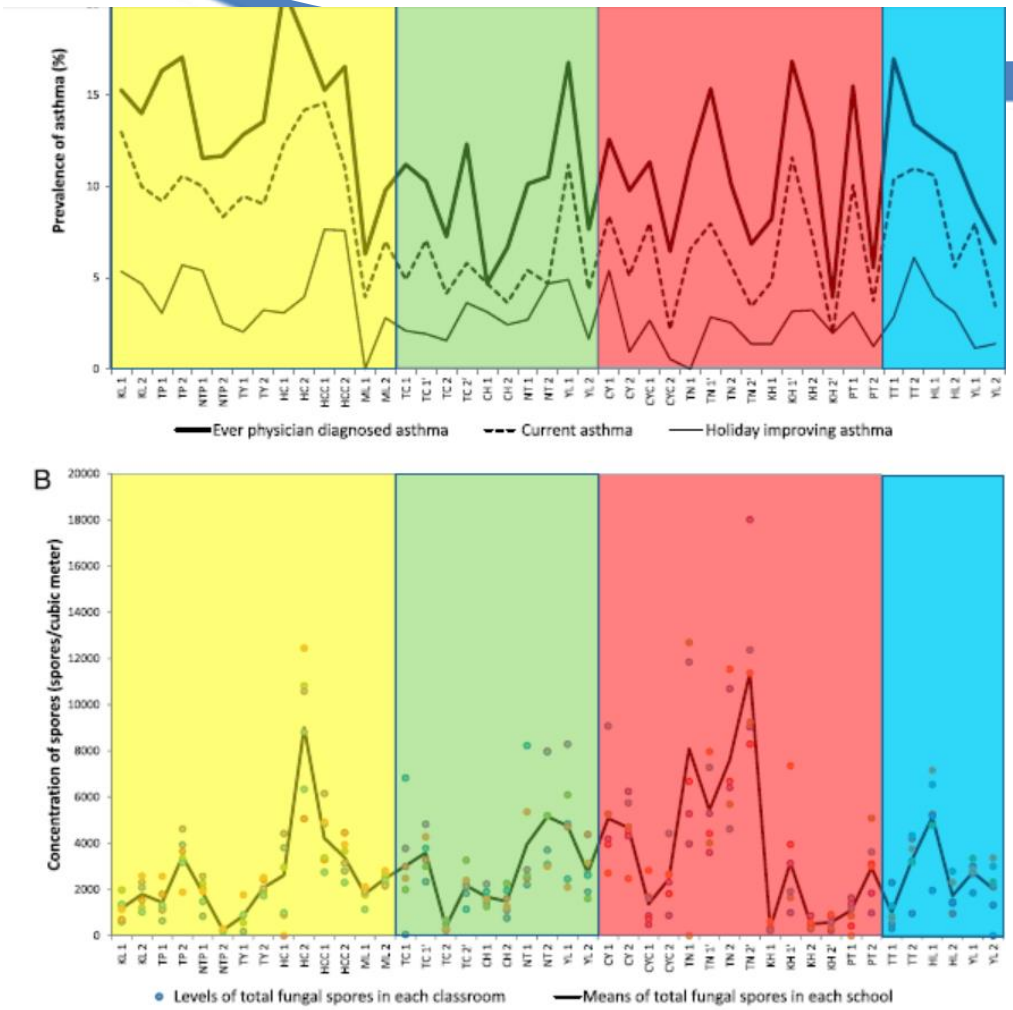
Approche spécifique / acceptation de la maladie.

- Baisse du niveau d'activité physique:
  - **Représentation négative de la dyspnée vécue comme un symptôme.**

Spécificité de l’ Environnement

- Hygiène
- Qualité de l’air
- Température
- Hygrométrie
- Tabac
- Nutrition

Hygiène



- Classroom *Aspergillus/Penicillium* and basidiospores are signifi cantly associated with childhood asthma and ASROH (asthma with symptoms reduced on holidays or weekends).
- Government health policy should explore environmental interventions for the elimination of fungal spores in classrooms to reduce the prevalence of childhood asthma.

- *Chi-Hsien Chen,* et al. Current Asthma in Schoolchildren Is Related to Fungal Spores in Classrooms, Chest 2014

Qualité de l'air

	Low PM communities		High PM communities	
	N (incidence)*	RR (95% CI)	N (incidence)*	RR (95% CI)
Number of sports played				
0	49 (0·023)	1·0	55 (0·021)	1·0
1	54 (0·032)	1·5 (1·0–2·2	36 (0·021)	1·1 (0·7–1·7)
2	22 (0·024)	1·2 (0·7–1·9	14 (0·018)	0·9 (0·5–1·7)
⩾3	13 (0·033)	1·7 (0·9–3·2	16 (0·033)	2·0 (1·1–3·6)

PM=particulate matter; N=number of cases of asthma; RR=relative risk, adjusted for ethnic origin, and for stratified baseline hazards by sex and age group. *Denominator=person-years of follow-up.

Table 4: **Effect of number of team sports played on the risk of new asthma diagnosis in high and low PM (and other pollutant) communities**

- In communities with high ozone concentrations, the relative risk of developing asthma in children playing three or more sports was 3·3 (95% CI 1·9–5·8), compared with children playing no sports.
- Sports had no effect in areas of low ozone concentration (0·8, 0·4–1·6).
- Time spent outside was associated with a higher incidence of asthma in areas of high ozone (1·4, 1·0–2·1), but not in areas of low ozone.

- McConnell R, et al. Asthma in exercising children exposed to ozone: A cohort study. Lancet 2002

Température

- Local hyperthermia (inspired air temperature 42°C) significantly decreased the response to exercise challenge and had a trend towards protection against histamine challenge at one hour.
- It might be a interfering effect of increased temperature on local inflammatory mediators.

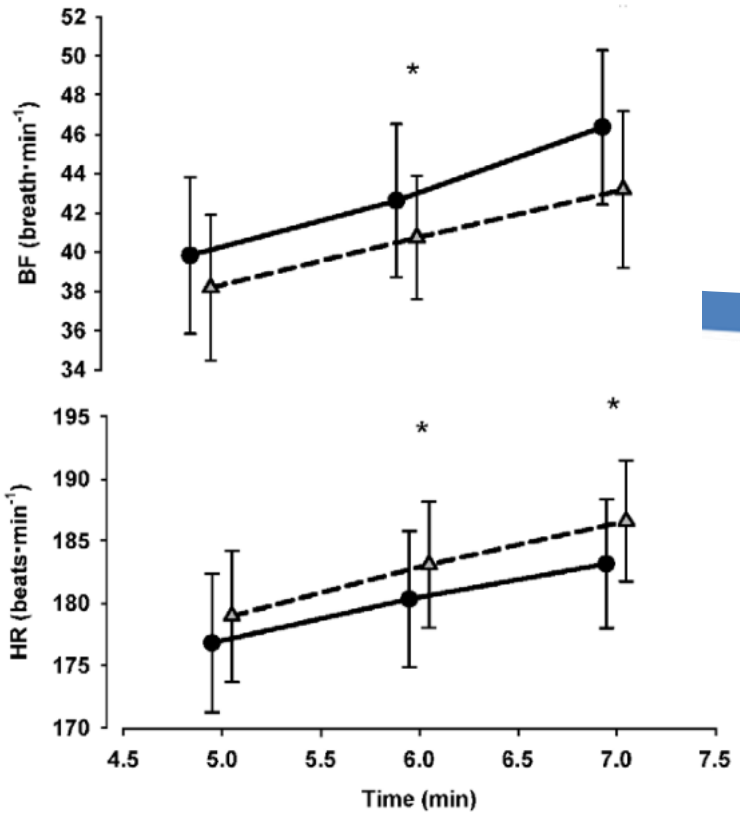
- Decrease in body temperature was found to induce airways obstruction.

- NIEMINEN M, et al. Attenuation of exercise induced asthma by local hyperthermia, Thorax 1993

- Higher ambient temperature is associated with upper lung function in children with asthma.

- Li S, et al. Ambient temperature and lung function in children with asthma in Australia. Eur Respir J. 2014

Hygrométrie



- O2 peak and V peak increased significantly from 40% to 95% relative humidity of the environmental air.

Variables	40% relative humidity	95% relative humidity	Mean difference (95% CI)	Significance (*P*)
$\dot{V}O_{2\ peak}$ (ml kg^{-1} min^{-1})	46.5	48.6	−2.13 (−3.30, −0.96)	0.001
HR_{peak} (beats min^{-1})	186	189	−3.20 (−5.17, −1.23)	0.003
RER_{peak}	1.03	1.00	0.03 (−0.01, 0.07)	ns
BF_{peak}(breath min^{-1})	46	43	2.22 (1.11, 3.33)	<0.001
$\dot{V}E_{peak}$ (L min^{-1})	99	100	−1.00 (−5.11, 3.11)	ns
$V_{t\ peak}$ (L breath^{-1})	2.24	2.34	−0.10 (−0.18, −0.031)	0.008
$\dot{V}_{peak}$ (km h^{-1})	10.2	10.8	−0.66 (−1.01, −0.31)	0.001

- T. Stensrud et al. Humidity influences exercise capacity in subjects with exercise-induced bronchoconstriction (EIB), Respiratory medecine 2006

Tabac

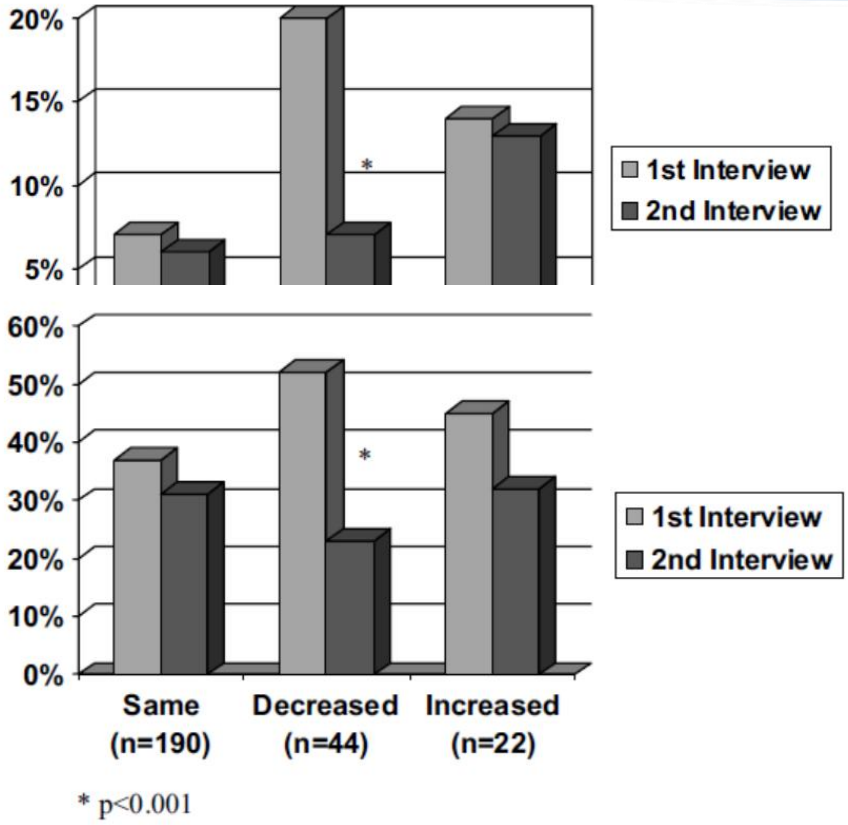


FIGURE 2. Percentage of children with at least one ED visit as categorized by change in ETS exposure.

- This is the first study to demonstrate an association between ETS (Environmental tobacco smoke) exposure reduction and fewer EPACs (episode of poor asthma control), respiratory-related ED visits, and hospitalizations.

- Potential policy implications include supporting ETS reductions and smoking cessation nterventions for parents and caregivers of children with asthma.

- *Lynn B* et al. Changes in Environmental Tobacco Smoke Exposure and Asthma Morbidity Among Urban School Children Chest 2009

Nutrition

- A Mediterranean diet has a potentially protective effect in girls aged 6–7 years with CSA.
- Obesity is a risk factor for this type of asthma only in girls.

Table 5 Summary logistic regression of the main factors under study

	Current occasional asthma		Current severe asthma		Rhinoconjunctivitis	
	Girls	Boys	Girls	Boys	Girls	Boys
	aOR (95% CI)	aOR (95% CI)	aOR (95% CI)	aOR (95% CI)	aOR (95% CI)	aOR (95% CI)
Mediterranean diet (per score unit)	0.97 (0.92 to 1.01)	0.98 (0.95 to 1.04)	0.90 (0.82 to 0.98)	0.98 (0.91 to 1.06)	0.98 (0.93 to 1.03)	0.99 (0.95 to 1.03)
Obesity	1.10 (0.82 to 1.48)	1.40 (1.11 to 1.78)	2.35 (1.51 to 3.64)	1.30 (0.84 to 2.01)	1.22 (0.91 to 1.62)	1.18 (0.92 to 1.51)
Exercise						
Never/occasionally	1	1	1	1	1	1
1–2 times/week	0.74 (0.59 to 0.93)	0.68 (0.54 to 0.86)	1.07 (0.67 to 1.70)	1.05 (0.66 to 1.65)	0.75 (0.60 to 0.95)	0.67 (0.53 to 0.84)
≥3 times/week	0.55 (0.43 to 0.70)	0.56 (0.45 to 0.70)	0.79 (0.48 to 1.30)	0.77 (0.49 to 1.22)	0.60 (0.47 to 0.76)	0.62 (0.50 to 0.78)

aOR, adjusted odds ratio (adjusted for younger and older siblings and maternal smoking).

- Luis Garcia-Marcos, et al. Relationship of asthma and rhinoconjunctivitis with obesity, exercise and Mediterranean diet in Spanish schoolchildren. Thorax 2007

Nutrition

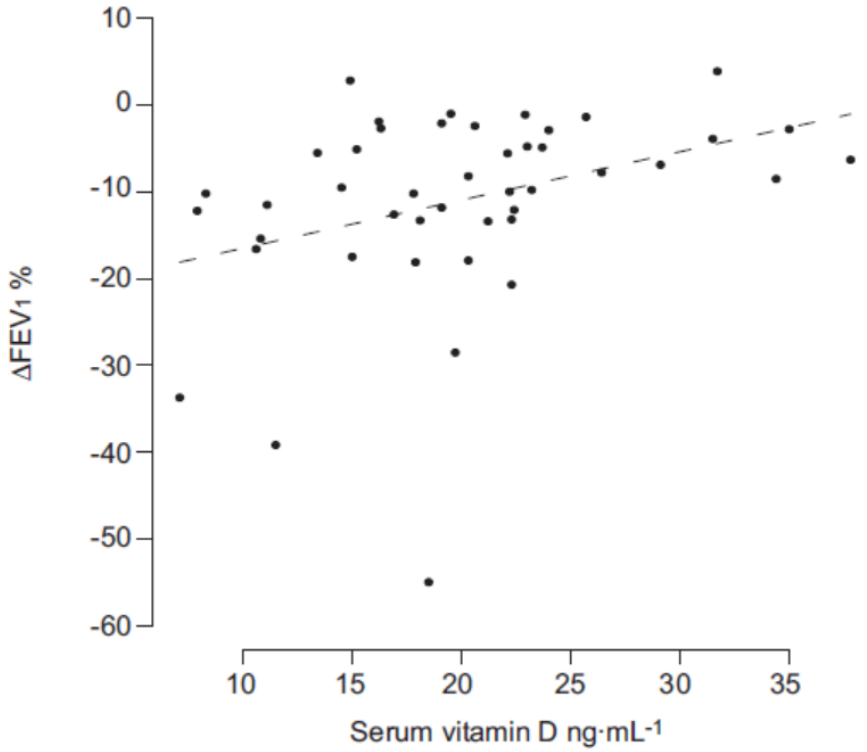
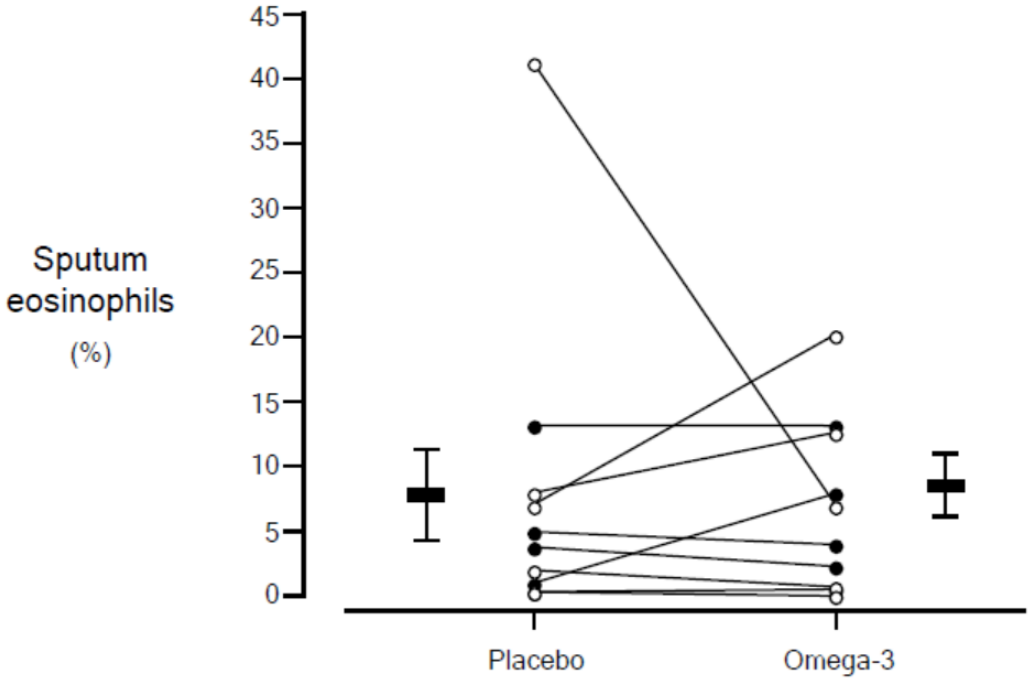


FIGURE 2. Relationship between serum vitamin D levels and change in forced expiratory volume in 1 s (ΔFEV1) after exercise challenge (r=0.48; p=0.001).

- Hypovitaminosis D is frequent in asthmatic children who live in a Mediterranean country.
- In those children, lower levels of vitamin D are associated with reduced lung function and increased reactivity to exercise.

- I. Chinellato, et al. Serum vitamin D levels and exerciseinduced bronchoconstriction in children with asthma, Eur Respir J 2011

Nutrition



- Three weeks of omega-3 supplements does not improve BHR to mannitol, decrease sputum eosinophils or inhibit urinary excretion of mast cell mediators in persons with mild-moderate asthma.
- Indicating that dietary omega-3 supplementation is not useful in the short-term treatment of asthma.

- John D. Brannan, et al. The effect of omega-3 fatty acids on bronchial hyperresponsiveness, sputum eosinophilia and mast cell mediators in asthma, Chest Online First, unedited version of this article

Spécificité de l’ Environnement

- Hygiène
- Qualité de l’air
- Température
- Hygrométrie

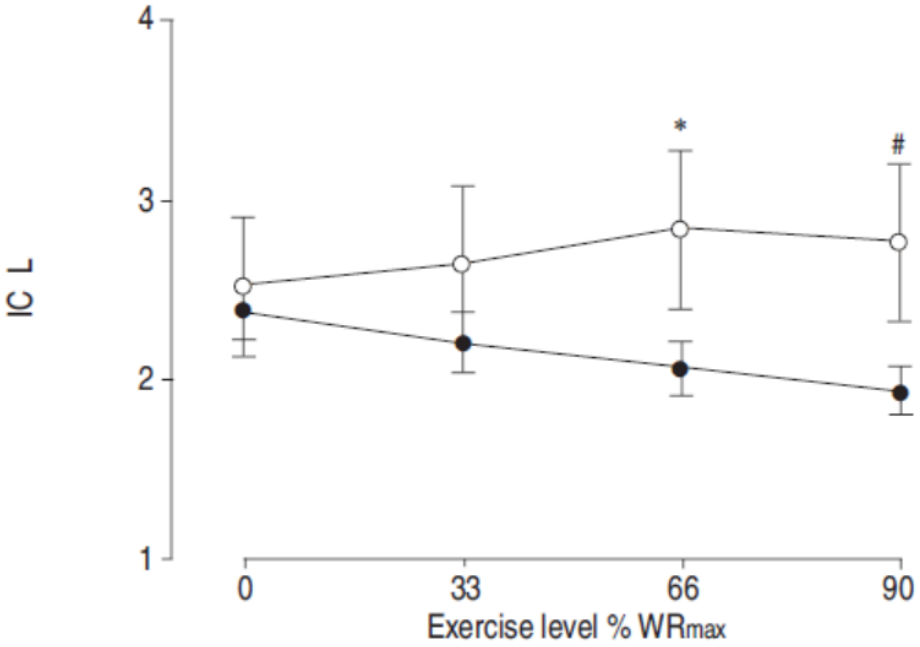
- Adapter le lieu des séances.
- Conseil d’adaptation de l’environnement intérieur et extérieur et ext.

- Tabac:
  - **Se former pour jouer notre rôle particulier.**
- Nutrition:
  - **Vit D, rassurer les obèses (déculpabiliser).**

Spécificité de la Physiopathologie

- Hyper Inflation Dynamique (HID)
- Syndrome d'Hyper Ventilation (SHV)
- Bronchospasme Induit par l'Effort (BIE)
- Exacerbations
- Rhinite

HID



- Tidal expiratory flow limitation and dynamic Hyperinflation during exercise are common in stable asthmatics with normal Spirometric results and without exercise-induced asthma, and may contribute to reduction in exercise capacity.

- E.N. Kosmas, et al. Exercise-induced flow limitation, dynamic hyperinflation and exercise capacity in patients with bronchial asthma, Eur respir J 2004

SHV

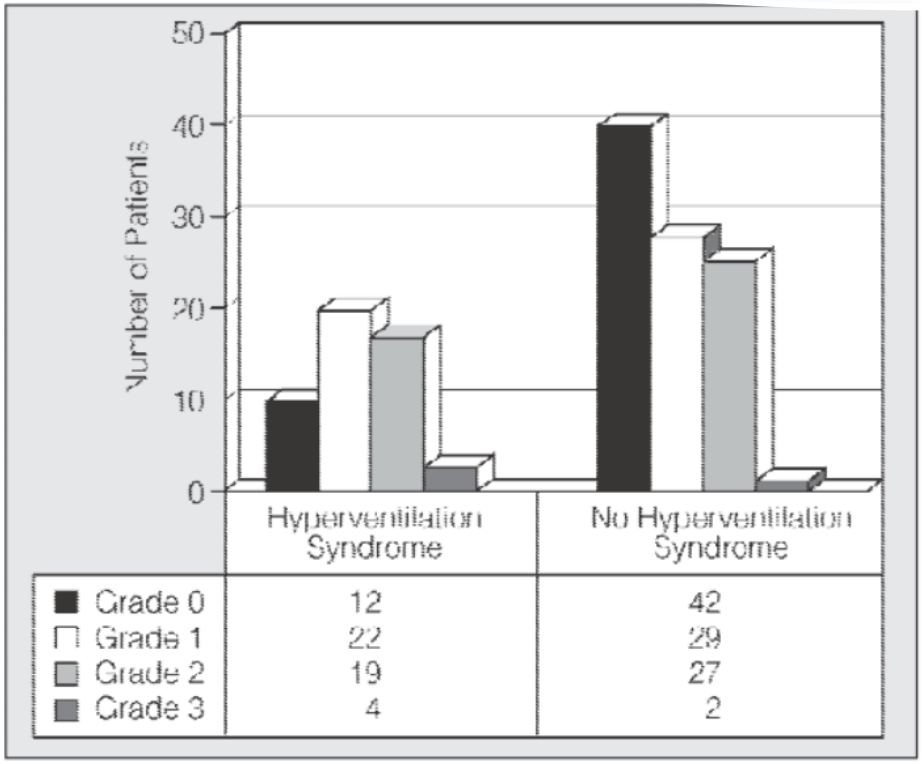


Figure. Basal dyspnea (Medical Research Council scale) in asthmatic patients with or without hyperventilation syndrome.

- One third of the asthmatic patients treated in a pulmonology clinic also present hyperventilation syndrom .

- E. Martínez, et al. Prevalence of Hyperventilation Syndrome in Patients Treated for Asthma in a Pulmonology Clinic, Arch Bronconeumol. 2005

SHV

QUESTIONNAIRE de NIJMEGEN:

comprend 16 items cotés 0=jamais, 1=rarement,2=parfois,3=souvent

test positif > 22 points *sensibilté=91%,spécificité=95%*

1 sensation de tension nerveuse	9 poitrine serrée
2 incapacité de respirer profondément	10 douleur thoracique
3 respiration accélérée ou ralentie	11 flou visuel
4 respiration courte	12 fourmillements des doigts
5 palpitations	13 ankylose des bras et doigts
6 froideur des extrémités	14 sensation de confusion
7 vertiges	15 ballonnement abdominal
8 anxiété	16 fourmillements péri-buccaux

- The NQ is a valid and reliable questionnaire for screening HVS in patients with stable mild-to-moderate asthma.

- Grammatopoulou EP, et al. Hyperventilation in asthma: a validation study of the Nijmegen Questionnaire—NQ, J Asthma 2014

BIE

Table 1—*Definitions of the Features Identified Using CPX*

Feature	Interpretation
EIB	15% drop in FEV_1 post exercise
HV	$\dot{V}O_2$ peak: often normal (>83% predicted) or near normal (>80% predicted)
	$\dot{V}E/\dot{V}CO_2$ at AT: increased (>34)
	Highest $PETCO_2$: low (<36 mm Hg)
	Respiratory frequency: increased (>55/min)
	SpO_2: normal (>95%, <4% drop during exercise)
	Variable RER, especially at beginning of test
	Hyperventilation occurring below the respiratory compensation point
VL	$\dot{V}O_2$ peak: <83% predicted
	Breathing reserve: <20% of MVV
	$\dot{V}E/\dot{V}CO_2$ at AT: >34
	SpO_2: >4% drop during exercise
	RER at peak exercise: <1

Table 4—*Features Identified at CPX in Patients With Difficult Asthma (N = 39)*

	CPX Feature, No.						
CPX Feature, No.	HV	EIB	SM	VL	DC	CaI	NT
HV, 14	10	1[a]	3	…	…	…	…
EIB, 8	1	3	…	4	…	…	…
SM, 8	3	…	5[b]	…	…	…	…
VL, 7	…	4	…	2	…	1	…
DC, 2	…	…	…	…	2	…	…
CaI, 1	…	…	…	1	…	…	…
NT, 8	…	…	…	…	…	…	8

More than one feature was identified in some individual patients (eg, 14 subjects had HV and of these one also had EIB and three had SM). No individual subject displayed more than two features. DC = deconditioning; NT = normal test; SM = submaximal test. See Table 1 legend for expansion of the other abbreviations.

[a]HV+EIB = 1 subject had HV and EIB

[b]5 SM+SM = 5 subjects had SM alone (no other feature was identified in each of the subjects CPX).

- *Diarmuid M,* et al. The Utility of Cardiopulmonary Exercise Testing in Diffi cult Asthma, Chest 2011

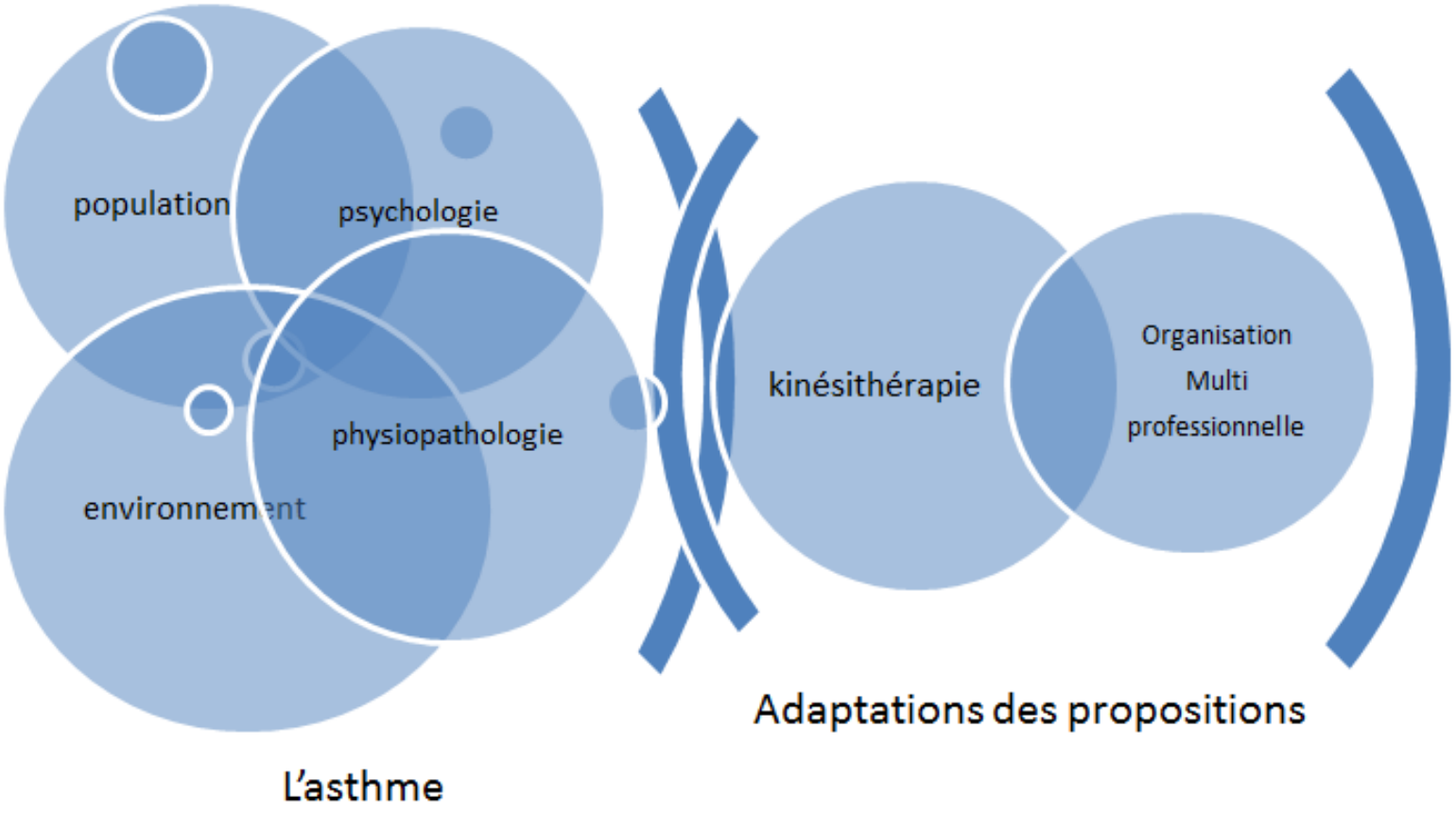
Spécificité de la Physiopathologie

- Hyper Inflation Dynamique (HID)
- Syndrome d'Hyper Ventilation (SHV)
- Bronchospasme Induit par l'Effort (BIE)
- Exacerbations
- Rhinite

Rôle attendu des séances :

- **La souplesse thoracique**
- **Le mode ventilatoire**
- **La force et l'endurance des muscles respiratoires et périphériques**

Spécificités des conditions de nos réponses



Adaptations du RE à l'asthme

Intervention	Advice/recommendation	Evidence
Breathing techniques	• Breathing techniques may be a useful supplement to asthma pharmacotherapy	A
Healthy diet	• Encourage patients with asthma to consume a diet high in fruit and vegetables for its general health benefits	A
Cessation of smoking and ETS exposure	• At every visit, strongly encourage people with asthma who smoke to quit. Provide access to counseling and smoking cessation programs (if available)	A
	• Advise parents/carers of children with asthma not to smoke and not to allow smoking in rooms or cars that their children use	A
	• Strongly encourage people with asthma to avoid environmental smoke exposure	B
	• Assess smokers/ex-smokers for COPD or asthma–COPD overlap syndrome (ACOS, Chapter 5, p73), as additional treatment strategies may be required	D
Physical activity	• Encourage people with asthma to engage in regular physical activity because of its general health benefits	A
	• Provide advice about prevention and management of exercise-induced bronchoconstriction (p50)	A
	• Regular physical activity confers no specific benefit on lung function or asthma symptoms per se, with the exception of swimming in young people with asthma	B
	• There is little evidence to recommend one form of physical activity over another	D

Adaptation de la ventilation à l'effort

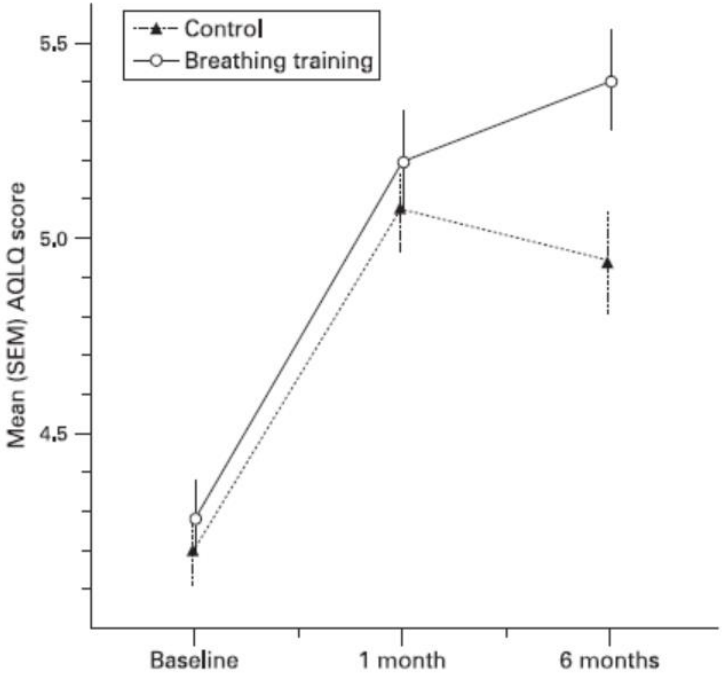


Figure 2 Mean (SEM) Asthma Quality of Life Questionnaire (AQLQ) scores in breathing training and control groups at baseline and at 1 and 6 months post-intervention in intention to treat population (increased score equates to better quality of life).

- Breathing training resulted in improvements in asthma-specific health status and other patient-centred measures but not in asthma pathophysiology.
- Such exercises may help patients whose quality of life is impaired by asthma, but they are unlikely to reduce the need for anti-inflammatory medication.

- M Thomas, et al. Breathing exercises for asthma: a randomised controlled trial, Thorax 2009

Adaptation de la ventilation à l'effort

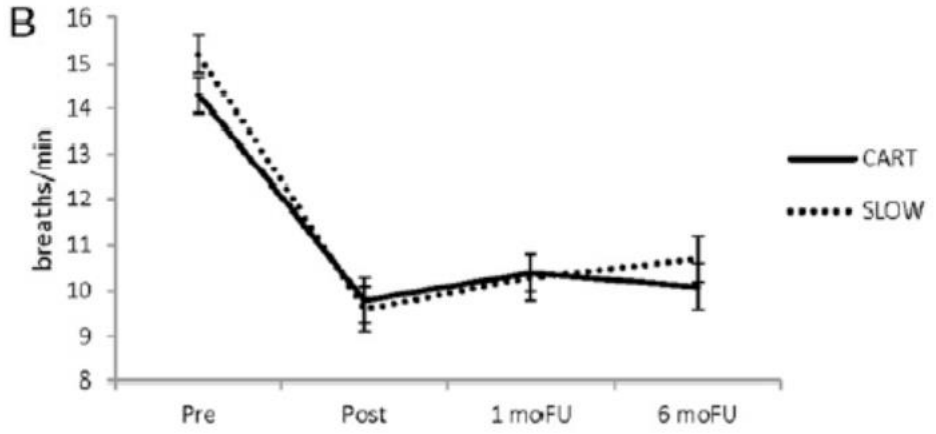


Figure 2 – *A-C, Changes in end-tidal P_{CO_2} (A), respiratory rate (B), and respiratory impedance (C) (from initial assessment at treatment session 1). 1moFU = 1-mo follow-up; 6moFU = 6-mo follow-up. See Figure 1 legend for expansion of other abbreviations.*

- Brief interventions aimed at raising P co 2 or slowing respiratory rate provide signifi cant, sustained, and clinically meaningful improvements in asthma control.
- Raising P co 2 was associated with greater benefi ts in aspects of lung function and long-term symptoms.

- *Ritz T,* et al. Controlling Asthma by Training of Capnometry-Assisted Hypoventilation (CATCH) vs Slow Breathing A Randomized Controlled Trial. Chest 2014

Adaptation de la ventilation à l'effort

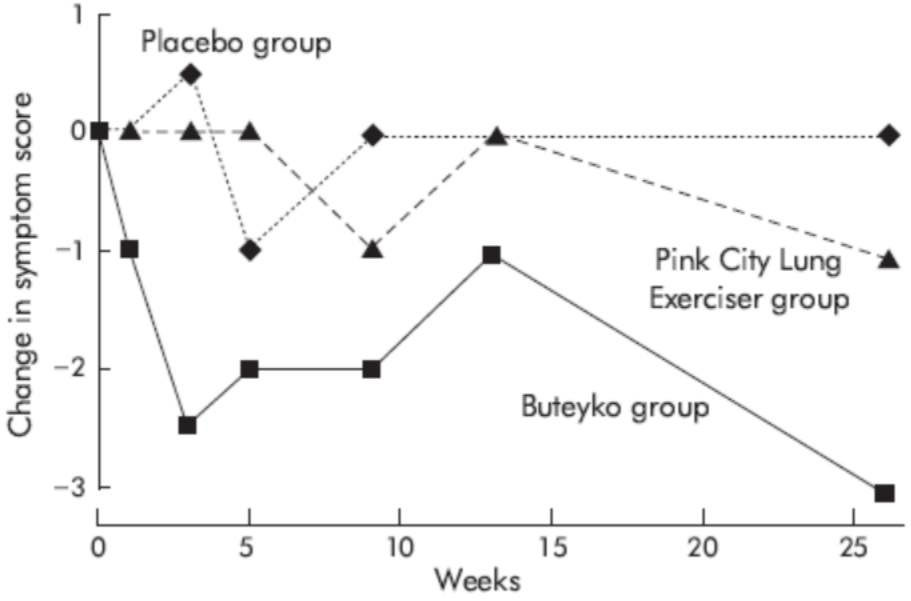


Figure 2 Median change in symptom scores during the 6 month study.

- Buteyko breathing technique can improve symptoms and reduce bronchodilator use but does not appear to Change bronchial Responsiveness or lung function in patients with asthma.
- No benefit was shown for the Pink City Lung Exerciser.

- S Cooper, YogEffect of two breathing exercises (Buteyko and pranayama) in asthma: a randomised controlled trial, Thorax 2003

Adaptation de la ventilation à l'effort

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K
O

- Reduce the frequency and depth of breathing and, as part of the technique, were asked to record pulse and breath holding time twice daily in a diary. They were instructed to use the breathing technique twice daily and to relieve asthma symptoms, and only to use their bronchodilator if that failed.
- Subjects were also asked to tape their mouth at night with hypoallergenic tape to prevent mouth breathing.

- Only 6%of the study population to be current users of complementary therapies.
- That use was greatest among those who expressed most concern regarding their current medication.

- Partridge P, et al. Breathing exercices in asthma, Thorax 2004

Adaptation des efforts au seuil ventilatoire

	Pre PR	Post PR
Number	25	25
ISWT (m)	220 (210)	370 (302)*
Best QMVC (kg)	21.8 (10)	24.4 (9.9)*
HAD A	8.85 (4.3)	8.63 (5.1)
HAD D	6 (5)	6 (7)
SGRQ Total score	49.6 (14.1)	48.9 (14.9)
LINQ	7.85 (2.86)	6.11 (2.5)*
MRC	3.23 (0.92)	3.08 (0.68)

Data presented as Mean (SD) or Median (IQR). *P<0.05

- Asthmatic patients benefit from attending a PR course in terms of functional capacity and muscle strength.

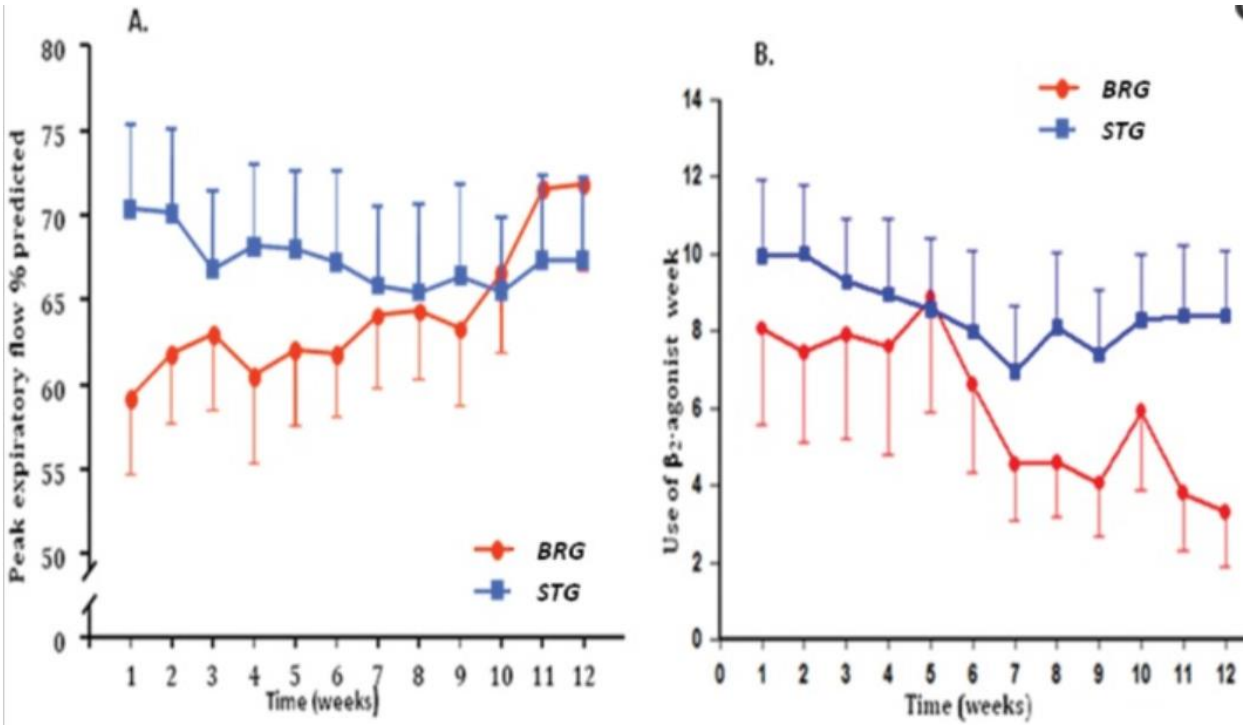
- Tanner RJ, et al. Does pulmonary rehabilitation improve exercise capacity and HRQoL in patients with asthma ? Thorax 2013

Adaptation de la prise de BDCA

- Preventative medication usage and/or pre-exercise use of a bronchodilating agent.
- Exercise challenges performed after a period of aerobic training need to be conducted at the same relative loads—that is, the same ventilatory equivalent—rather than at the same absolute load, and with the same inspired air conditions.

- N Carroll, et al. Exercise training as an adjunct to asthma management? , Thorax 1999

Adaptation de la fréquence et de la durée du traitement



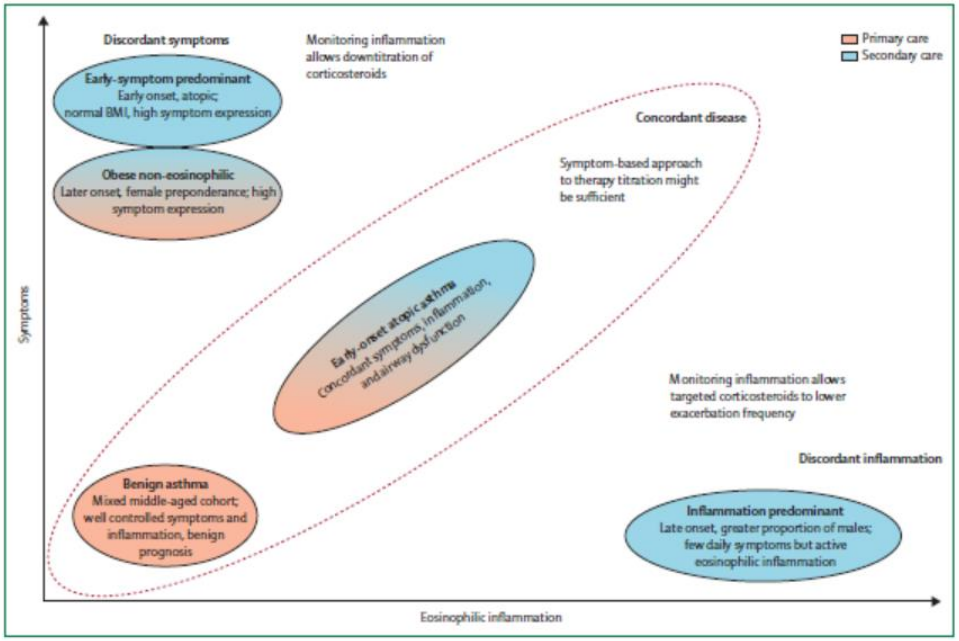
- Three-month chest physiotherapy program improved the clinical control of asthma and the quality of life and decreased the symptoms of panic and agoraphobia in a group of asthmatics with high anxiety scores at baseline.

- Laurino RA, et al. Respiratory rehabilitation: a physiotherapy approach to the control of asthma. Symptoms and anxiety. Clinics (Sao Paulo) 2012

Spécificité de la Psychologie

- Bon contrôle dans les études mais pas dans la vraie vie
- Peu de corrélation entre symptômes et sévérité
- Crises d’asthme
- Maladie chronique
- Empowerment

Tous différents



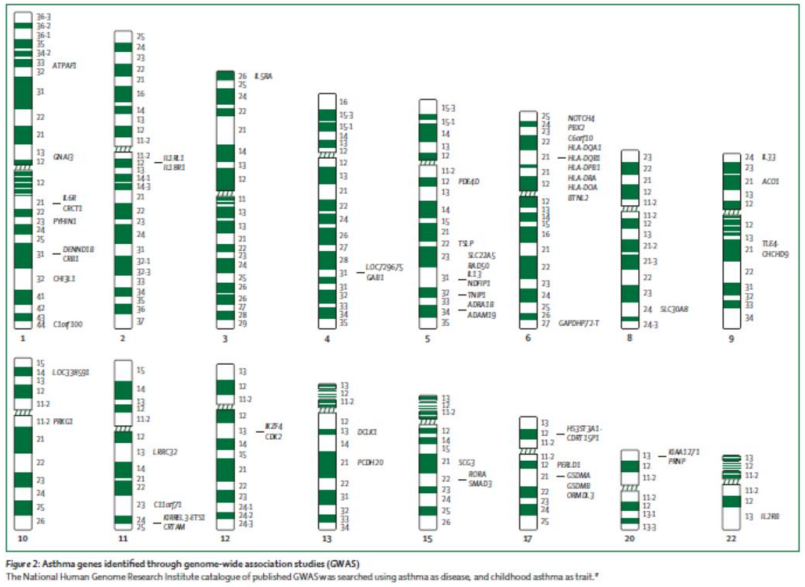


Figure 2: Asthma genes identified through genome-wide association studies (GWAS)
The National Human Genome Research Institute catalogue of published GWAS was searched using asthma as disease, and childhood asthma as trait.*

- Martinez FD, Vercelli D. Asthma. Lancet 2013

Bon contrôle dans les études mais pas dans la vraie vie

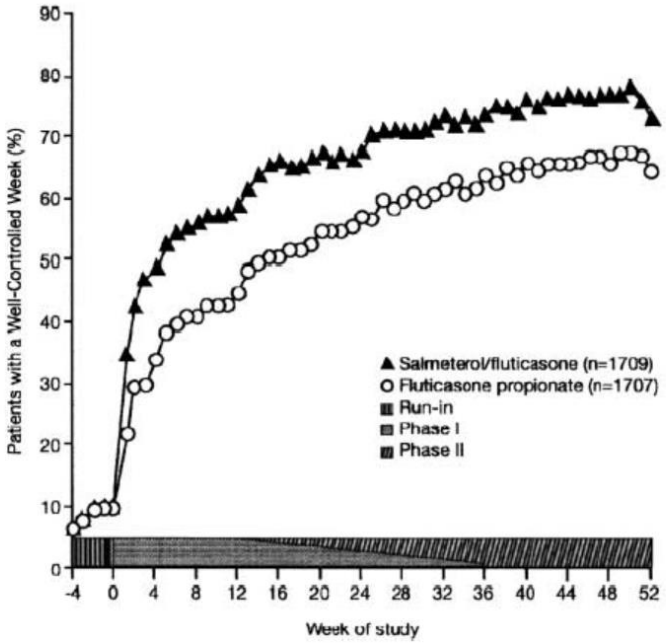


Figure 2. Proportion of patients achieving a well-controlled week (non-cumulative) over Weeks −4 to 52 for all strata combined on treatment with salmeterol/fluticasone or fluticasone propionate.

- This study has shown that guideline-defined control of asthma can be achieved in the majority of patients with uncontrolled asthma with combination salmeterol/fluticasone treatment.
- This approach should be the preferred treatment selection for patients whose asthma is uncontrolled, regardless of their previous inhaled corticosteroid regimen.

- Bateman ED, et al. Can guideline-defined asthma control be achieved? The Gaining Optimal Asthma ControL study. Am J Respir Crit Care Med 2004

Peu de corrélation entre symptômes et sévérité

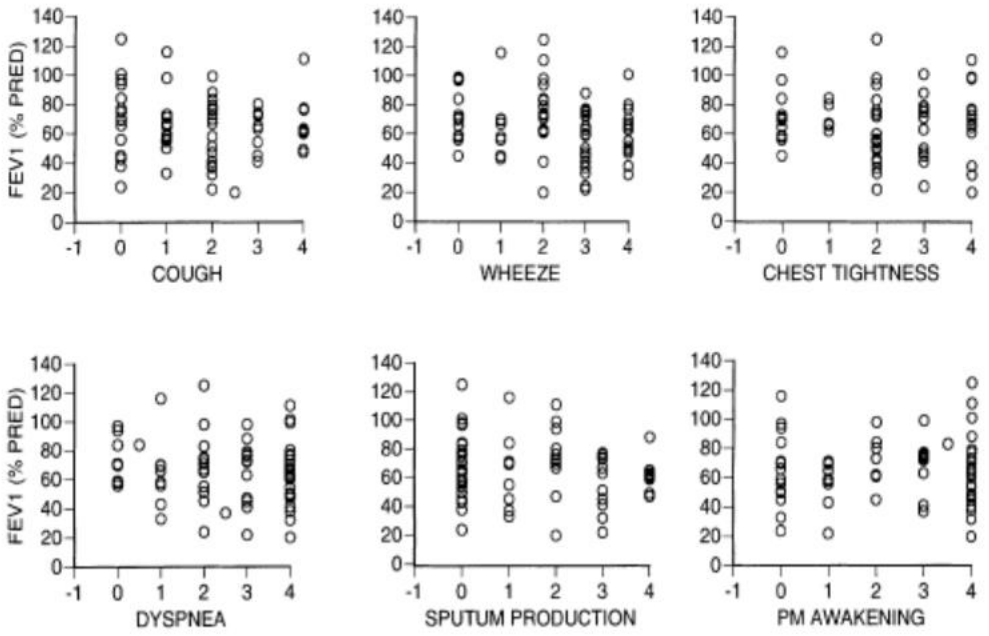


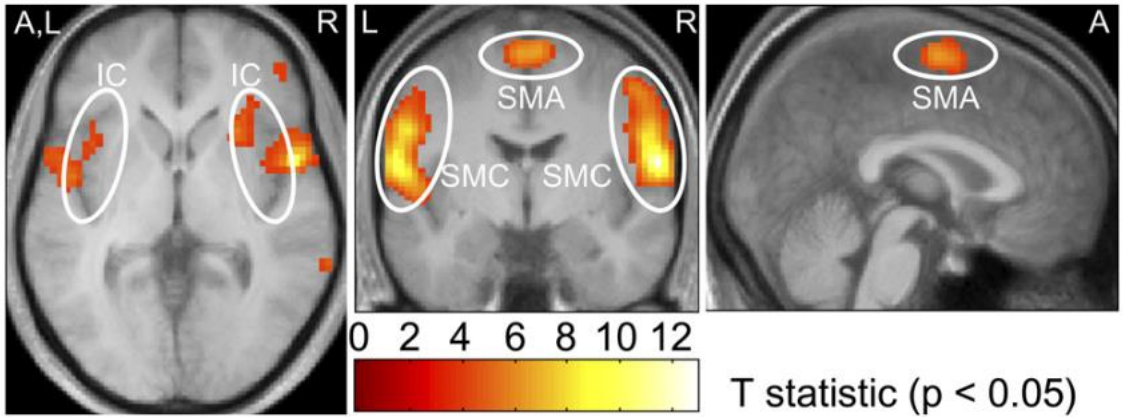
FIGURE 2. Relationship between individual asthma symptoms and FEV_1.

- Asthma symptoms correlate poorly with the level of airway obstruction as determined by the FEV1 and PEF.
- Following treatment, subjective improvement in asthma symptoms may occur without improvement in the level of airway obstruction.
- These results support the recommendation to measure airway obstruction objectively when assessing adult patients with chronic asthma.

- Teeter JG, et al. Relationship between airway obstruction and respiratory symptoms in adult asthmatics. Chest 1998

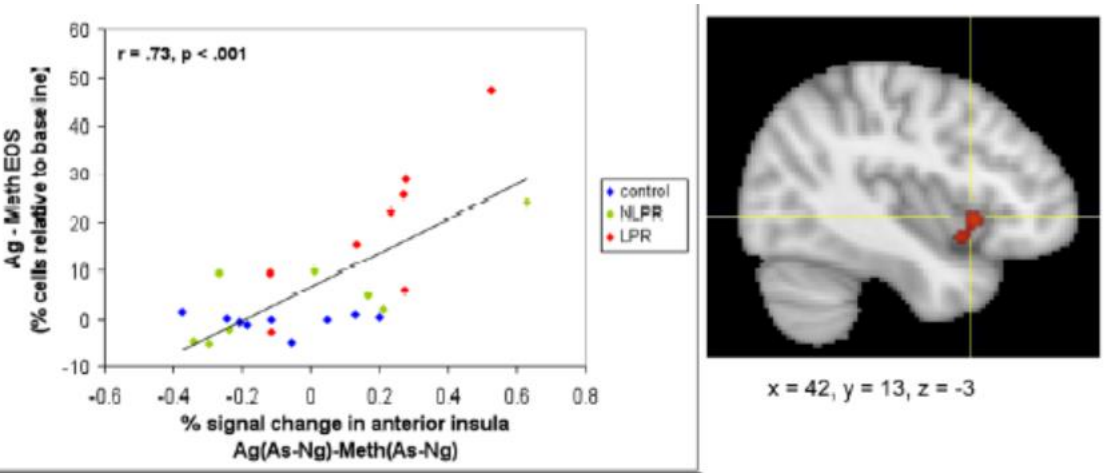
Crises d'asthme

- The results of the present brain imaging study suggest that the unpleasantness of subjectively perceived dyspnea is processed in the right human anterior insula.



- von Leupoldt A, et al. The unpleasantness of perceived dyspnea is processed in the anterior insula and amygdala. Am J Respir Crit Care Med 2008

Crises d'asthme



x = 42, y = 13, z = -3

- Neurophenotypes for asthma may be identifiable by neural reactivity of brain circuits known to be involved in processing emotional information.
- Those with greater activation in the anterior insula, in response to asthma-relevant psychological stimuli, exhibit greater inflammatory signals in the lung and increased severity of disease and may reflect a subset of asthmatics most vulnerable to the development of psychopathology.

- Rosenkranz MA, et al. Are there neurophenotypes for asthma? Functional brain imaging of the interaction between emotion and inflammation in asthma. PLoS One 2012

Crises d'asthme retentissement psychologique

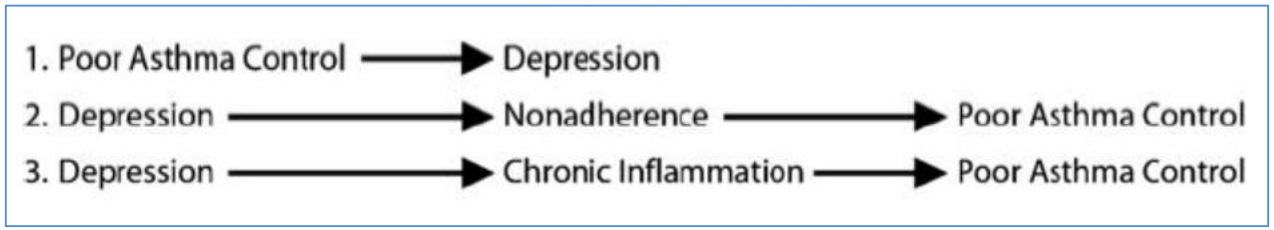
- Anxiety and depression occur more commonly in people with asthma than expected, and are associated with poor asthma outcomes.

- Thomas M, et al. Asthma and psychological dysfunction. Prim Care Respir J 2011

- The strongest independent predictor of the unpleasantness of breathlessness for a given degree of bronchoconstriction during a challenge test is anxiety.

- Spinhoven P, et al. Association of anxiety with perception of induced bronchoconstriction in patients with asthma. Thorax 1997

Crises d'asthme retentissement psychologique



- Successful treatment of asthma in young people is likely to be impeded when depression and other risk behaviors are present.

- Regardless of the cause and-effect sequence, an observation of risk-taking behaviors, such as smoking or recreational drug use, in a young person with asthma should prompt further assessment for mood disorder and poor treatment adherence and be followed by appropriate action.

- Patients presenting with a mood disorder require referral for psychologic intervention.

- Bender BG , et al. Risk taking, depression, adherence, and symptomcontrol in adolescents and young adults with asthma. Am J Respir Crit Care Med 2006

Maladie chronique

- Education in asthma self-management involve:
  - self-monitoring by either peak expiratory flow or symptoms,
  - regular medical review
  - a written action plan .
- Training programmes that enable people to adjust their medication using a written action plan appear to be more effective than other forms of asthma self-management.

- Gibson PG , et al. Self-management education and regular practitioner review for adults with asthma. Cochrane Database Syst Rev 2003

Self management
Self affirmation

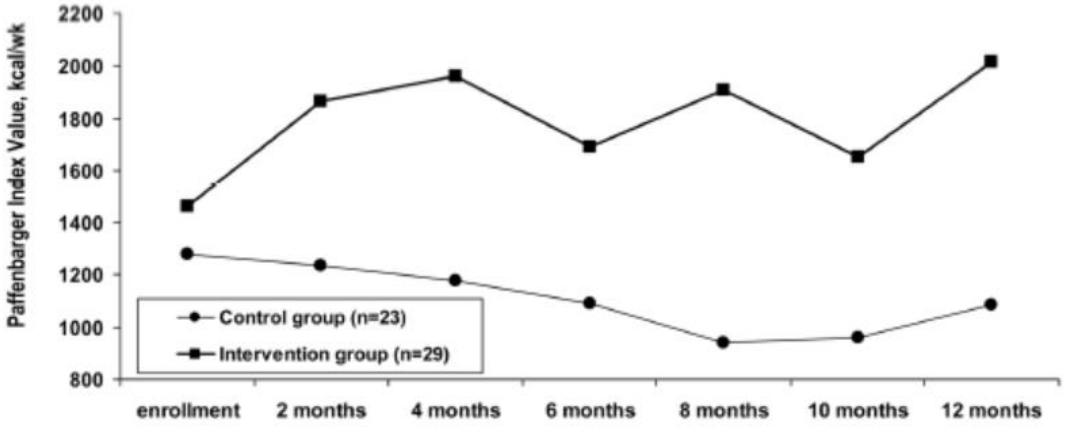
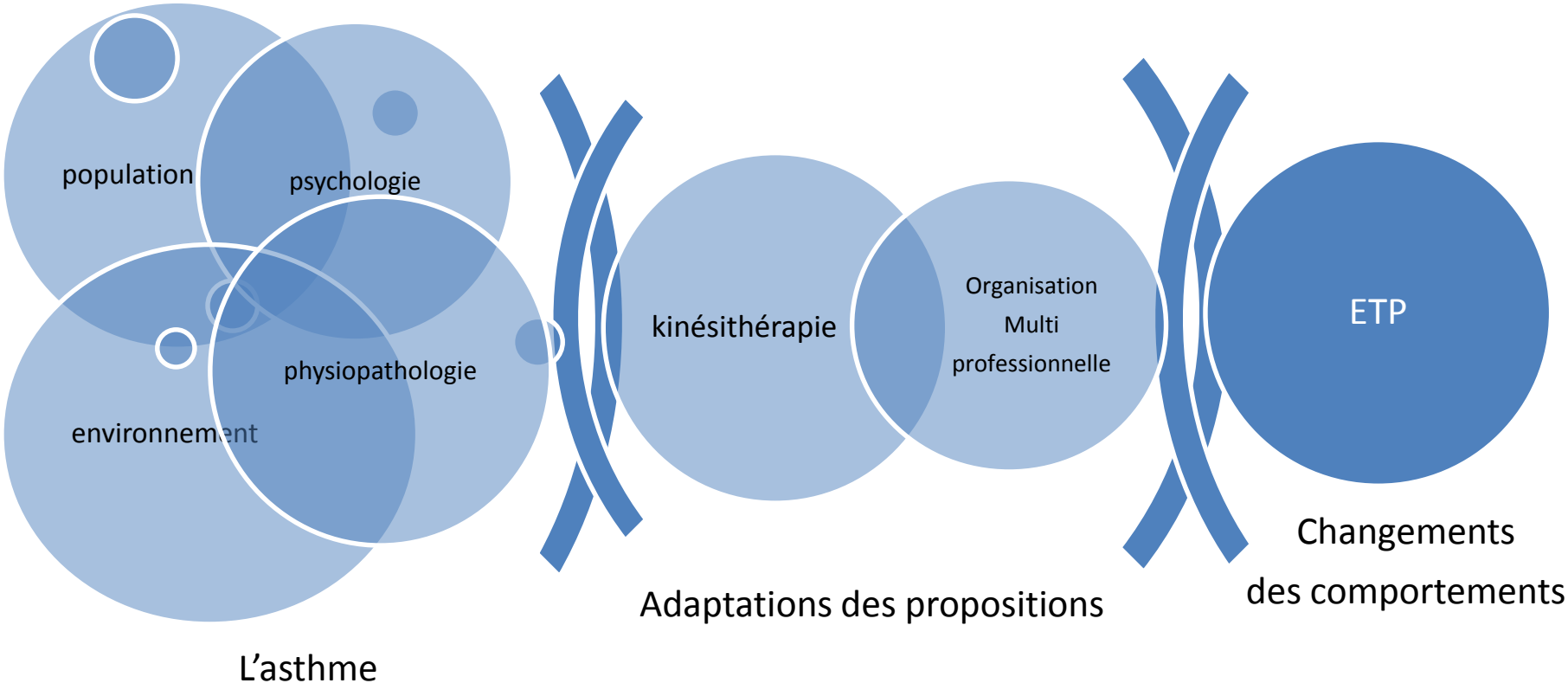


Figure 3.
Paffenbarger Physical Activity and Exercise Index values at each follow-up for patients who required urgent care for asthma or any hospitalization during the trial.

- An educational intervention enhanced with positive affect induction and self-affirmation was more effective than the educational protocol alone in increasing physical activity in asthma patients.

- Mancuso CA , et al. Increasing physical activity in patients with asthma through positive affect and self-affirmation: a randomized trial. Arch Intern Med 2012

Spécificité du Réentrainement à l'Exercice dans l'Asthme



Spécificité de l’ ETP

- The 10 key clinical activities for quality asthma care offer guidance to ensure quality health care for persons with asthma.

Establish Asthma Diagnosis

Classify Severity of Asthma

Schedule Routine Follow-Up Care

Assess for Referral to Specialty Care

Recommend Measures to Control Asthma Triggers

Treat or Prevent All Comorbid Conditions

Prescribe Medications According to Severity

Monitor Use of ß2-Agonist Drugs

Develop a Written Asthma Management Plan

Provide Routine Education on Patient Self-Management

- National Heart, Lung, and Blood Institute National Asthma Education and Prevention Program. 2007. Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma.

Spécificité de l’ ETP

- Adherence was poor.
- Examining and acknowledging health beliefs of older teens in the context of their complicated lives may facilitate discussions about self-management.

- Naimi DR , et al. Adolescents and asthma: why bother with our meds? J Allergy Clin Immunol. 2009

Spécificité de l’ ETP

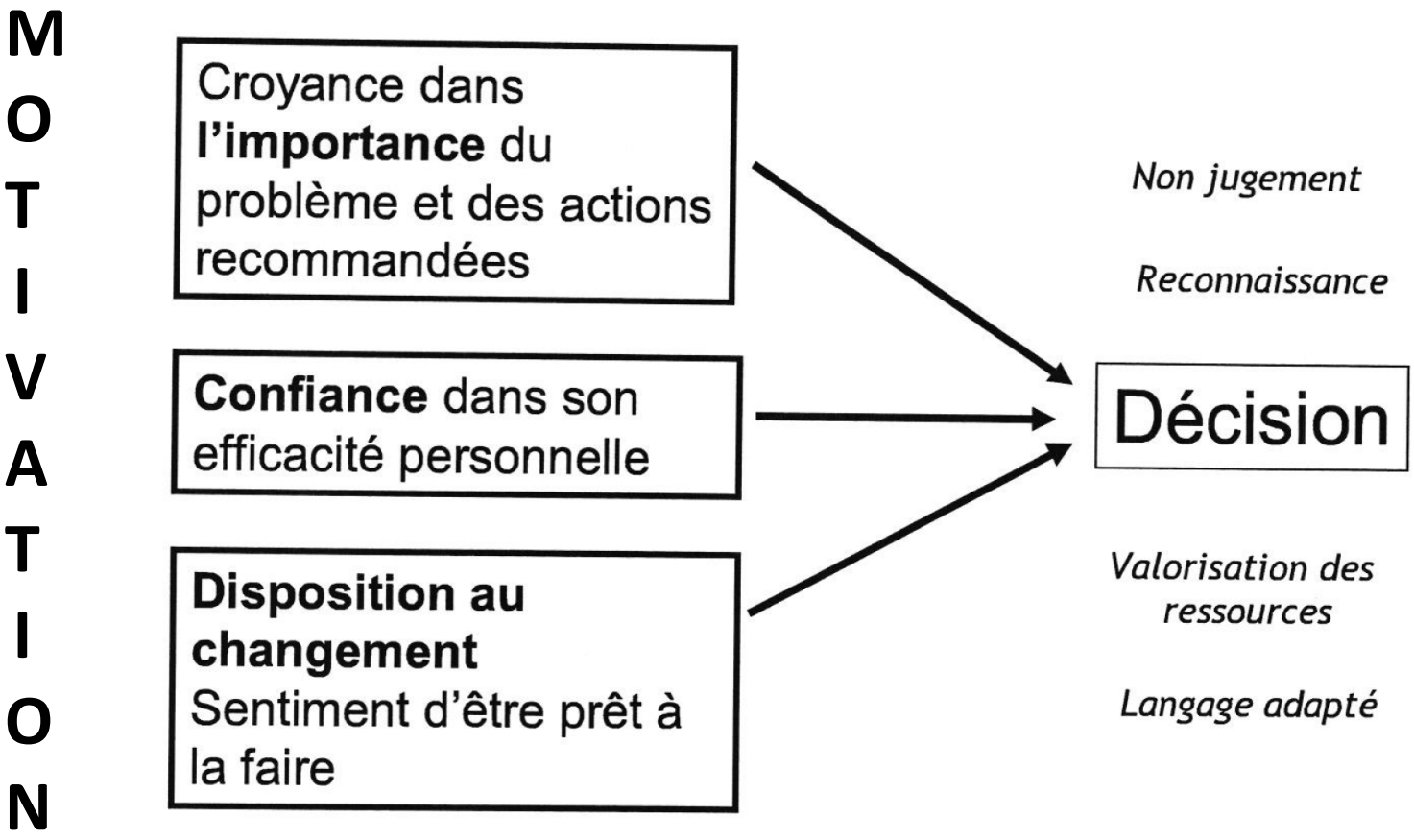
- 119 écoles de l’asthme recensées en France.
- 29 réponses:
  - 1/3 propose des ateliers de gestion de l’asthme par l’exercice physique
  - 1/4 organise un maintien des acquis.

LABORATOIRE DE SANTÉ PUBLIQUE
ET DE PROMOTION DE LA SANTÉ
DE TOURS

- L’estime de soi et la confiance et soi sont augmentées par l’exercice physique (ANES 2001).
- Ne privilégier aucun sport en particulier (Charleroux A, 2014).

- Des Garets C. Etat des lieux d’un programme de gestion de l’essoufflement dans les écoles de l’asthme en France. Mémoire de M2 promotion et gestion de la santé 2014

Spécificité de la Pédagogie



- *L'Entretien motivationnel : aider la personne à engager le changement*. W Miller et S Rollnick (trad. Dorothée Lécallier et Philippe Michaud), Paris, InterEditions, 2006

Spécificité de la Pédagogie

Croyance dans **l'importance** du problème et des actions recommandées

Pour qu'un individu accepte de se soigner il faut de manière interdépendante qu'il :

- Soit convaincu qu'il est bien atteint par sa maladie ou qu'il pourrait contracter cette maladie (**vulnérabilité**).
- Pense que cette maladie et ses conséquences peuvent être graves pour lui (**gravité**).
- Pense que suivre son traitement aura un effet bénéfique (**efficacité**).
- Pense que les bienfaits du traitement contrebalance avantageusement les effets secondaires, les contraintes psychologiques, sociales et financières engendrées par ce traitement (**avantages/ inconvénients**).
- Pense qu'il peut y arriver (**confiance / sentiment. d'efficacité personnelle**) (théorie sociale cognitive Bandura 1977).

- Rosenstock, Healthe belief model,1974

Spécificité de la Pédagogie

Confiance dans son efficacité personnelle

Réassurance
Expérience de la dyspnée physiologique d'effort
Repères à l'effort
Expérimentation de la prise du BDCA
Émulation de groupe

Disposition au changement
Sentiment d'être prêt à la faire

Passage à l'acte
Petits objectifs
Expression des appréhensions
Partage des solutions
Transferts dans la vie quotidienne

Spécificité de la Pédagogie

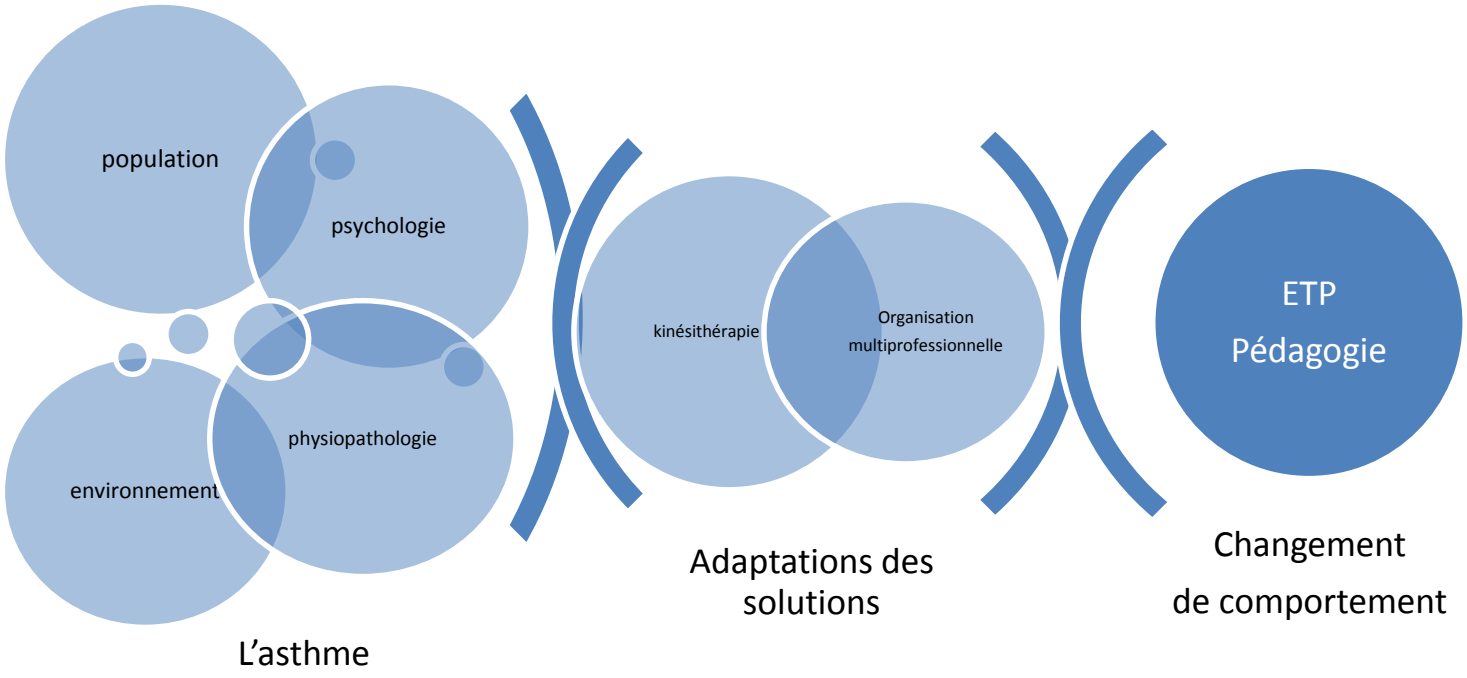
Pédagogie d'accompagnement.

Favoriser les gestes mentaux:

Attention
Compréhension
Réflexion
Imagination
Mémorisation

- *La motivation, son éveil, son développement*. De la Garanderie A. Paris, Éditions du Centurion 1991
- *Les profils pédagogiques*. De la Garanderie A. Paris, Éditions du Centurion, 1980

Spécificité du Réentrainement à l'Exercice dans l'Asthme



Qui peut réentrainer un asthmatique ?

Merci de votre attention

laurent.jubert@gmail.com