



Plonger dans les effets bénéfiques!?!?

1^{er} Congrès International Scientifique Association
Internationale des Centres Hyperbares
Francophones

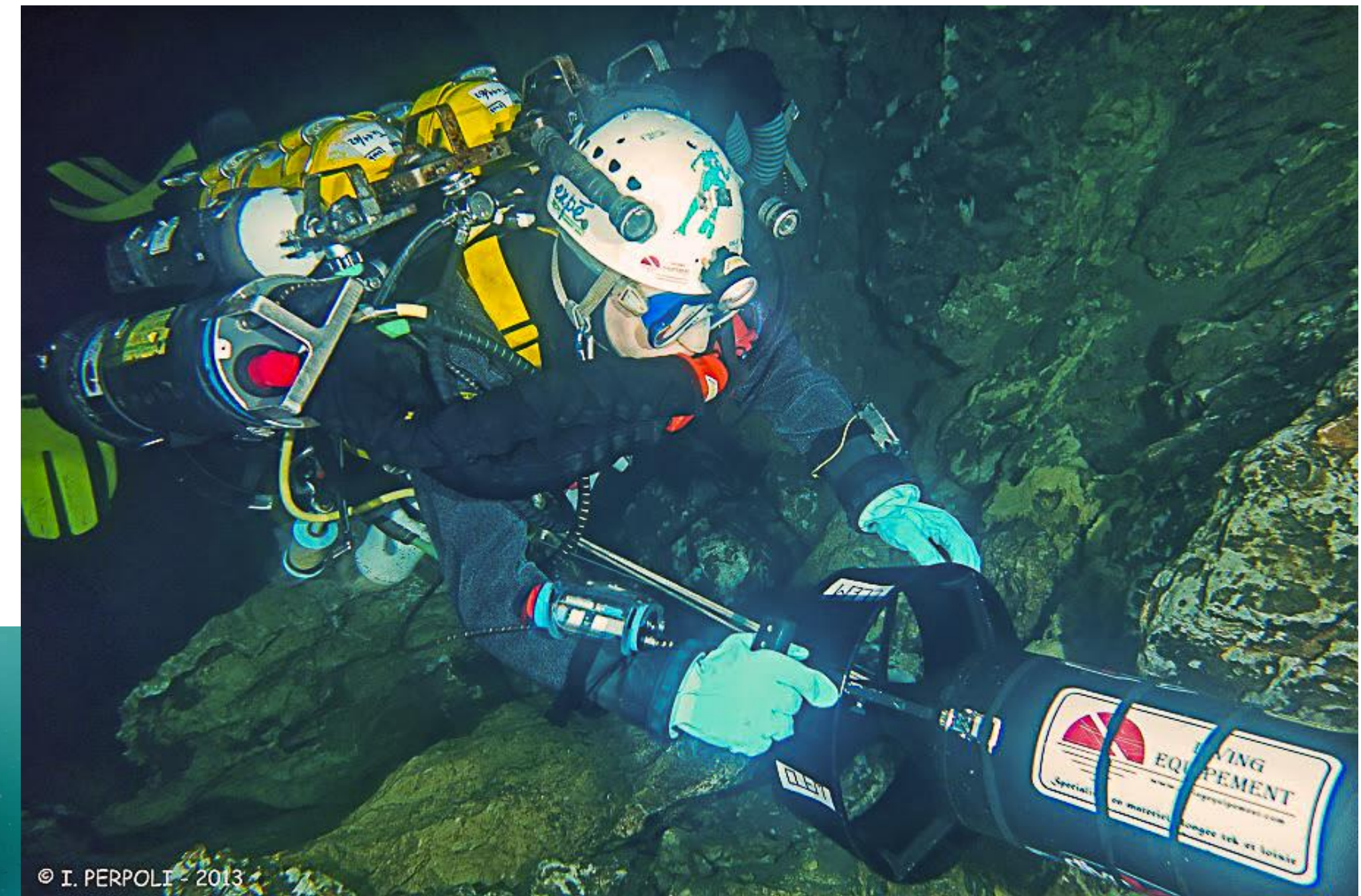
7 - 9 novembre 2019

Genève

Marc-Alain Panchard



Quelle plongée?



Quel plongeur?



Quelle(s) source(s)?



Diving and Hyperbaric Medicine

The Journal of the South Pacific Underwater Medicine Society and the European Underwater and Baromedical Society

SPUMS

Volume 43 No. 4 December 2013

EUBS



Scientific diving in the Canadian high Arctic

Changes in blood glucose during HBOT no different to room air
Is finger-prick blood glucose reliable during HBOT?
DCI or acute coronary syndrome – a diagnostic dilemma
Diving-related deaths in Australian waters in 2009
Pulmonary barotrauma in breath-hold divers
HBOT good for muscle injury in a rat model

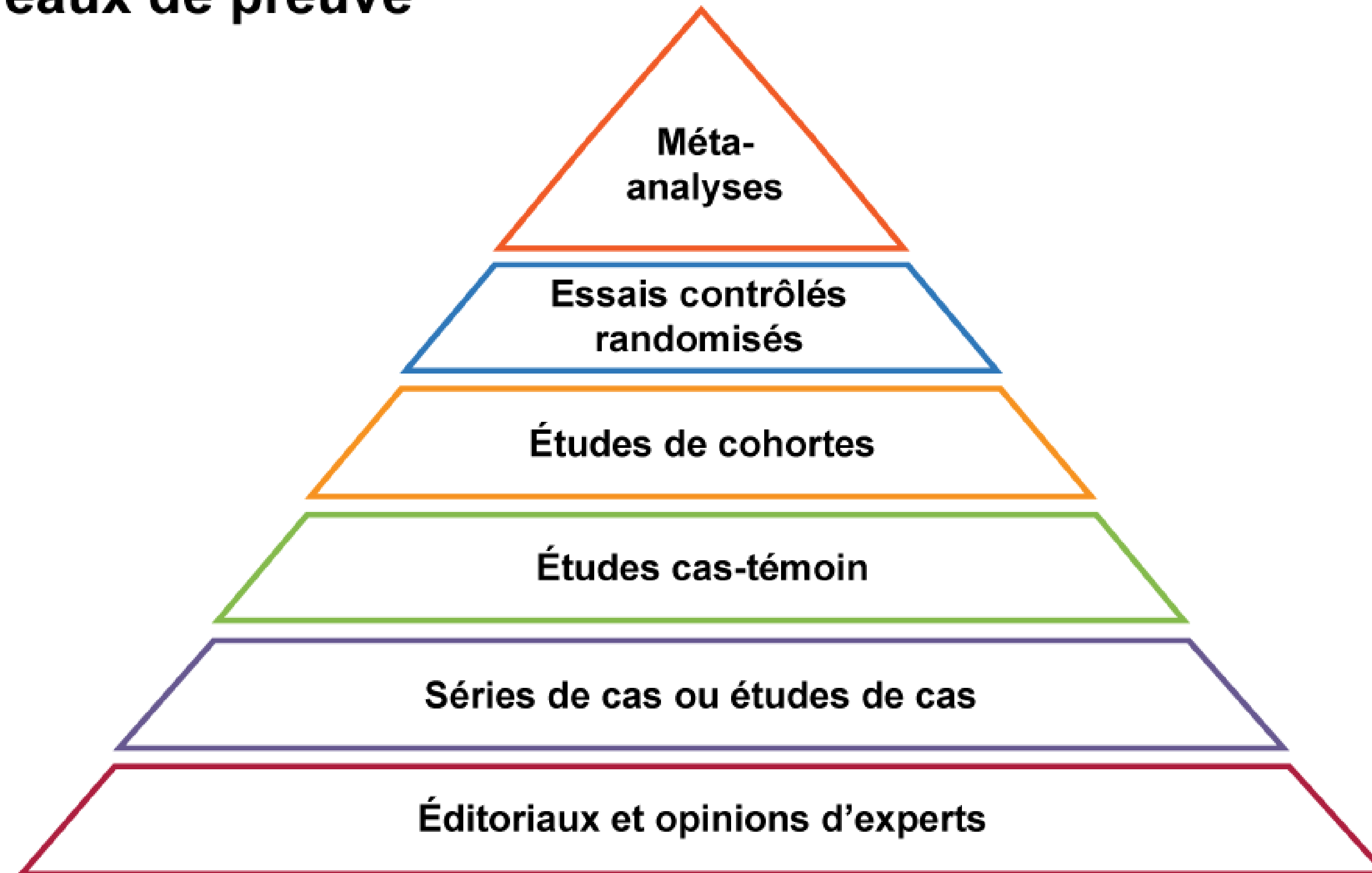
Print Post Approved PP 100007612

ISSN 1833-3516, ABN 29 299 823 713



Quelle(s) étude(s)?

Niveaux de preuve



Quels effets?

Définition de la santé pour l'OMS

Un état de complet bien-être physique, mental et social, et ne consistant pas seulement en une absence de maladie ou d'infirmité.



Quels effets?



Connection avec la nature dans des endroits paradisiaques

Tonnes de CO₂ produites (AR)

Israël: 3.2

Mexique: 8.8

Egypte: ~ 3.5

Maldives: 8.17

Bahamas: 7.77

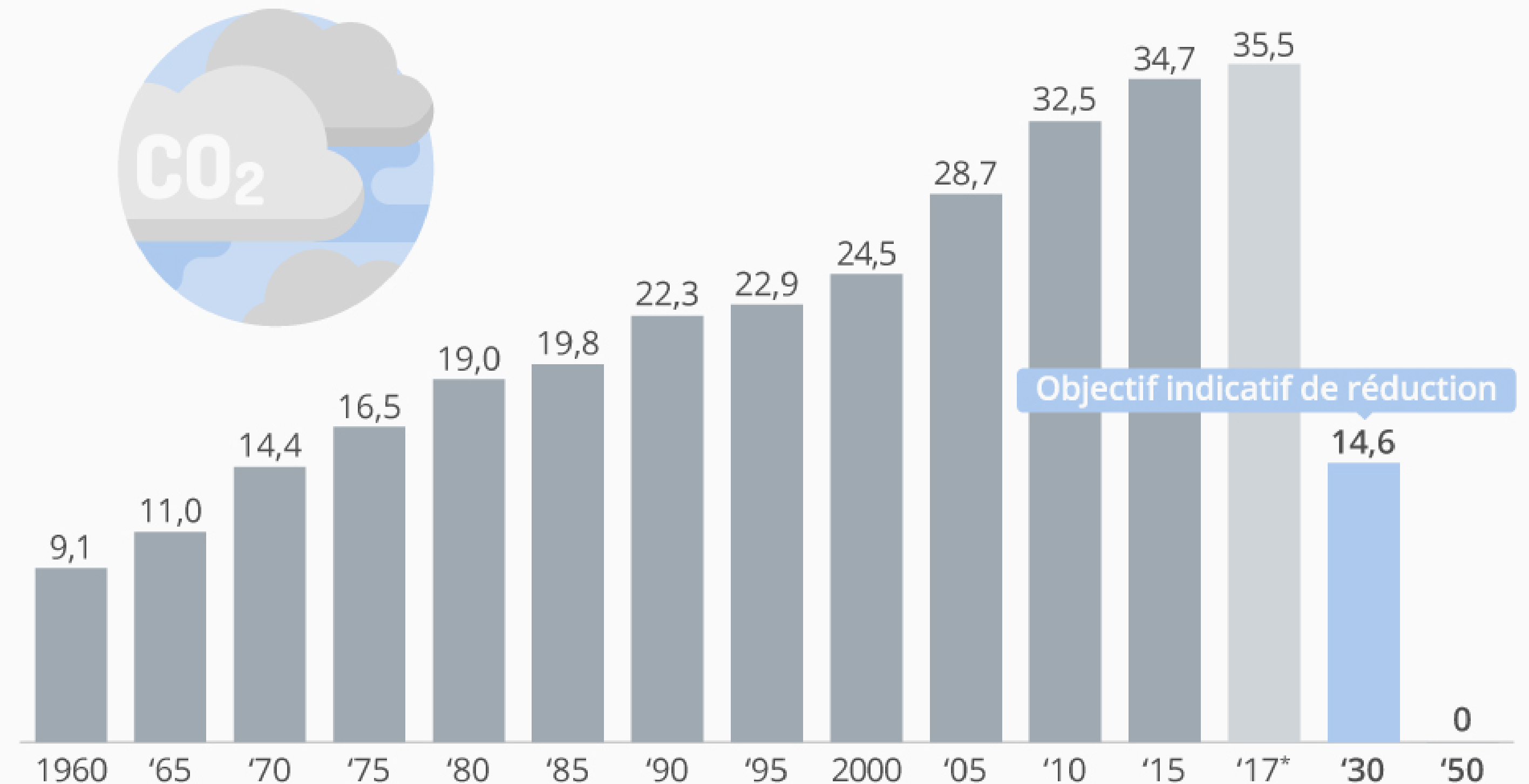
Savièse (Sion) - Genève: 0.04

1 kg de viande: 14.4 kg

1 kg de lentilles: 0.7 kg

Le monde doit viser zéro émission de CO₂

Émissions mondiales des CO₂ jusqu'en 2016 et objectif de réduction du GIEC (en Mds de tonnes)



CC BY ND
@Statista_FR

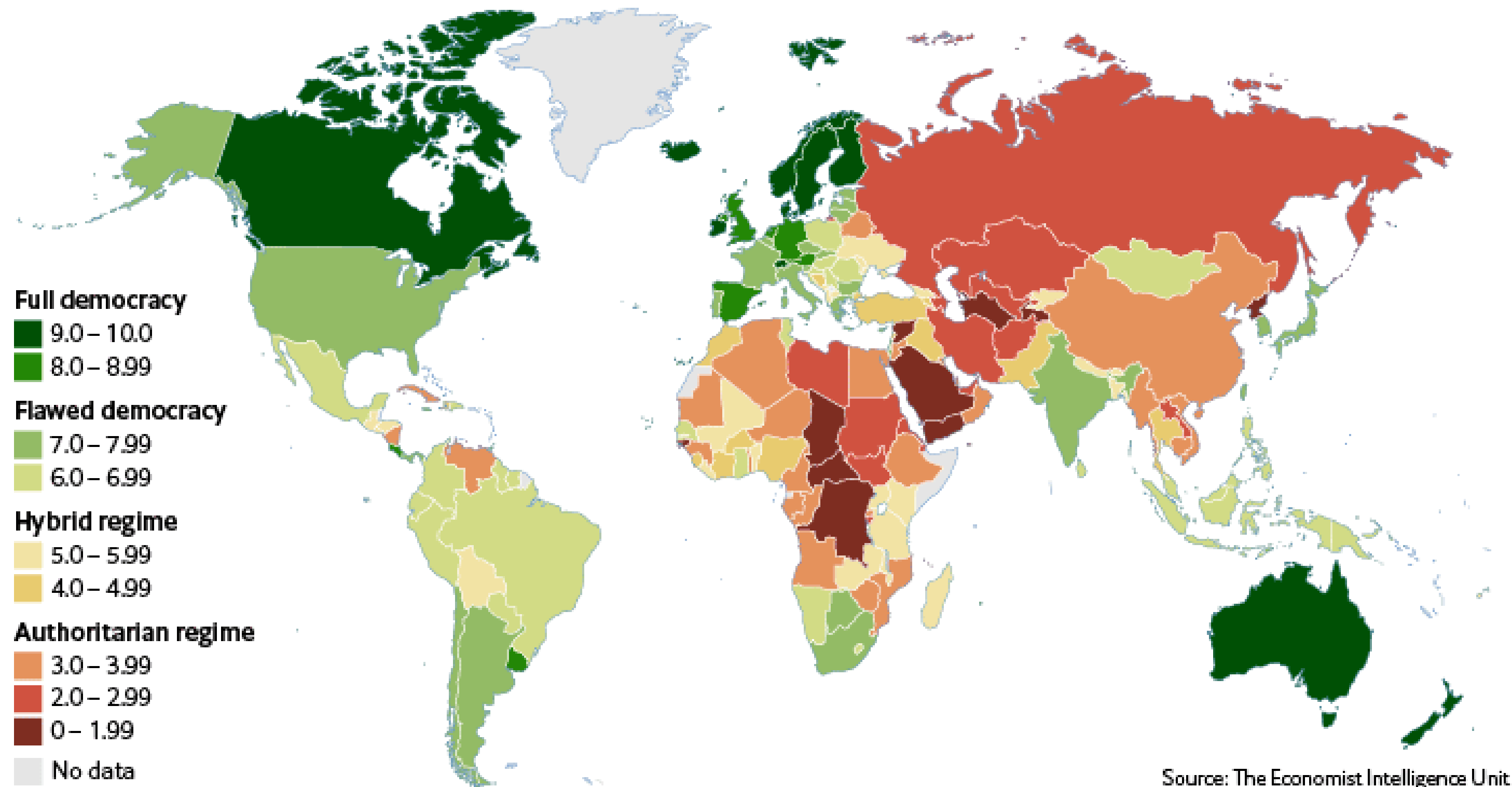
* Estimation.

Sources : Global Carbon Project, Spiegel

statista

Connection avec la nature dans des endroits paradisiaques

The Economist INTELLIGENCE UNIT Democracy Index 2018



Indice de démocratie

Israël: 30^{ème}

Mexique: 71^{ème}

Egypte: 127^{ème}

Maldives: non calculé

Norvège: 1^{ère}

Canada: 6^{ème}

Suisse: 10^{ème}

France: 29^{ème}

Belgique: 31^{ème}

Non calculé,...



Maldives. Retour de la peine de mort, même pour les mineurs



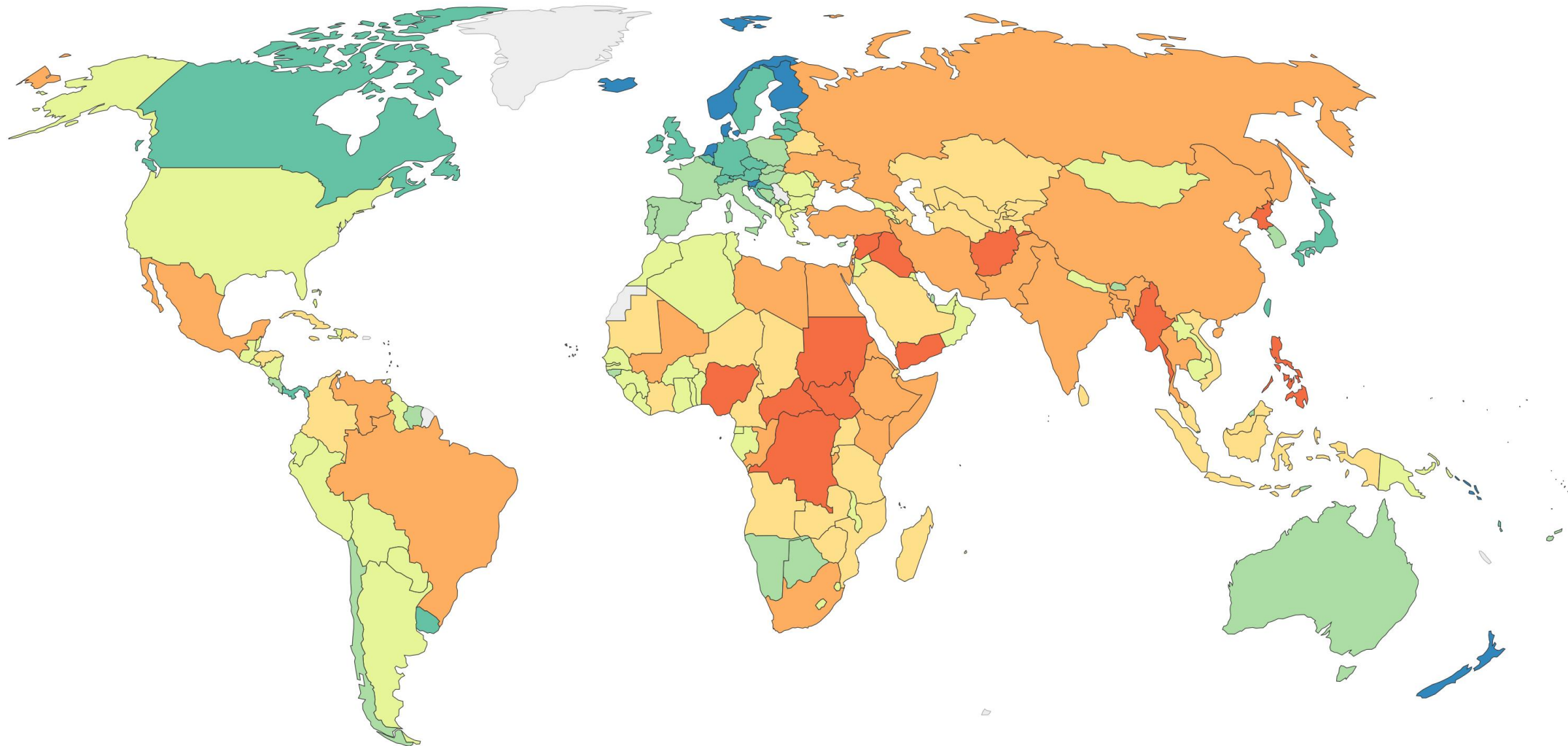
Après soixante ans de moratoire, la peine de mort va de nouveau être appliquée. Le gouvernement entend ainsi se placer en conformité avec la charia.

Le 27 avril, le gouvernement des Maldives a annoncé que le pays allait mettre fin à soixante ans de moratoire au sujet de la peine capitale. Les mineurs coupables de meurtre pourront être condamnés à mort, alors que le droit international proscrit l'application de peines réservées aux adultes aux moins de 18 ans.

Connection avec la nature dans des endroits paradisiaques

Human Rights Scores, 2017

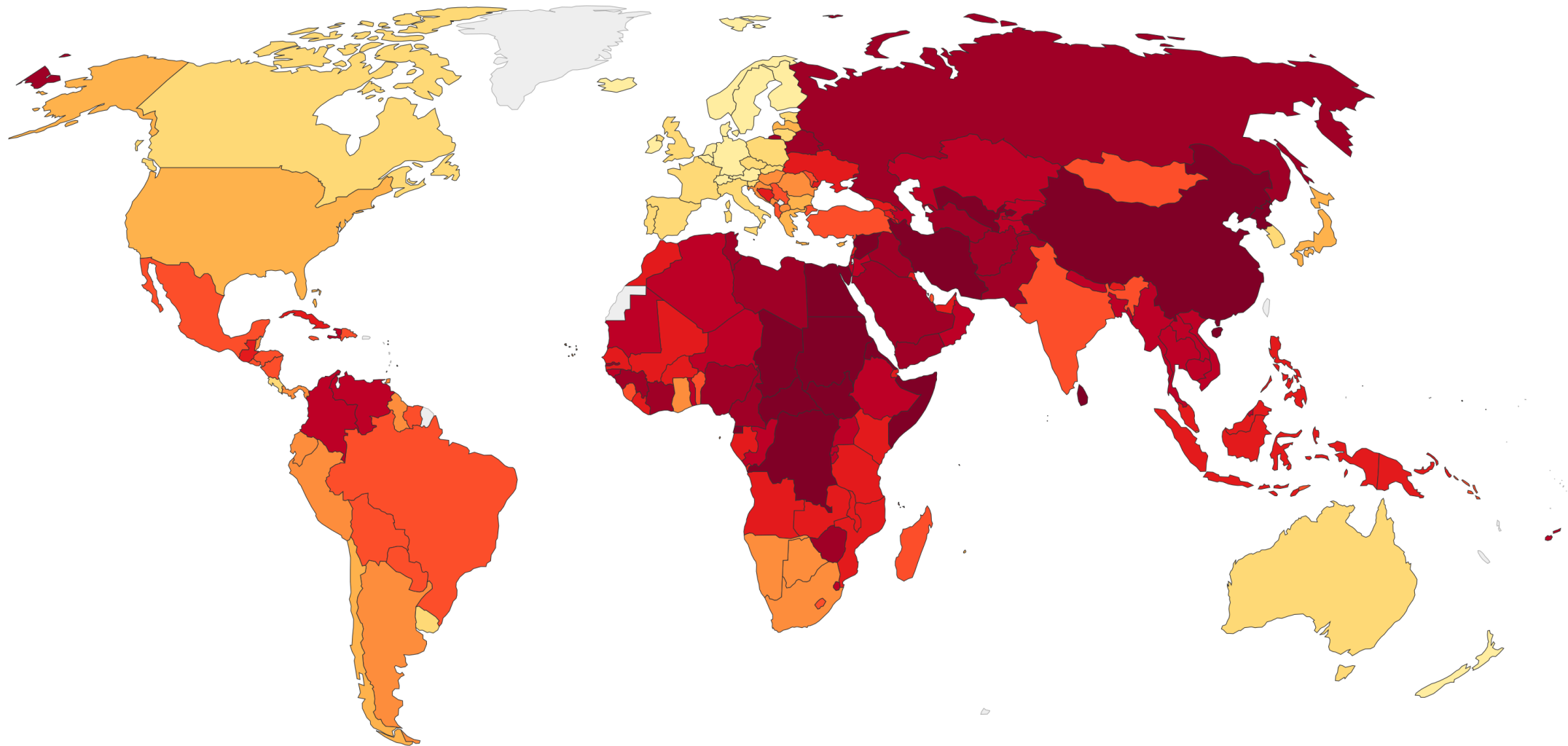
These Human Rights Scores indicate the degree to which governments protect and respect human rights. The values range from around -3.8 to around 5.4 (the higher the better).



Source: Schnakenberg and Fariss (2014), Fariss (2019) OurWorldInData.org/human-rights/ • CC BY
Note: These Scores are produced from an econometric model that combines measures from nine other sources. For details, see Fariss (2019).

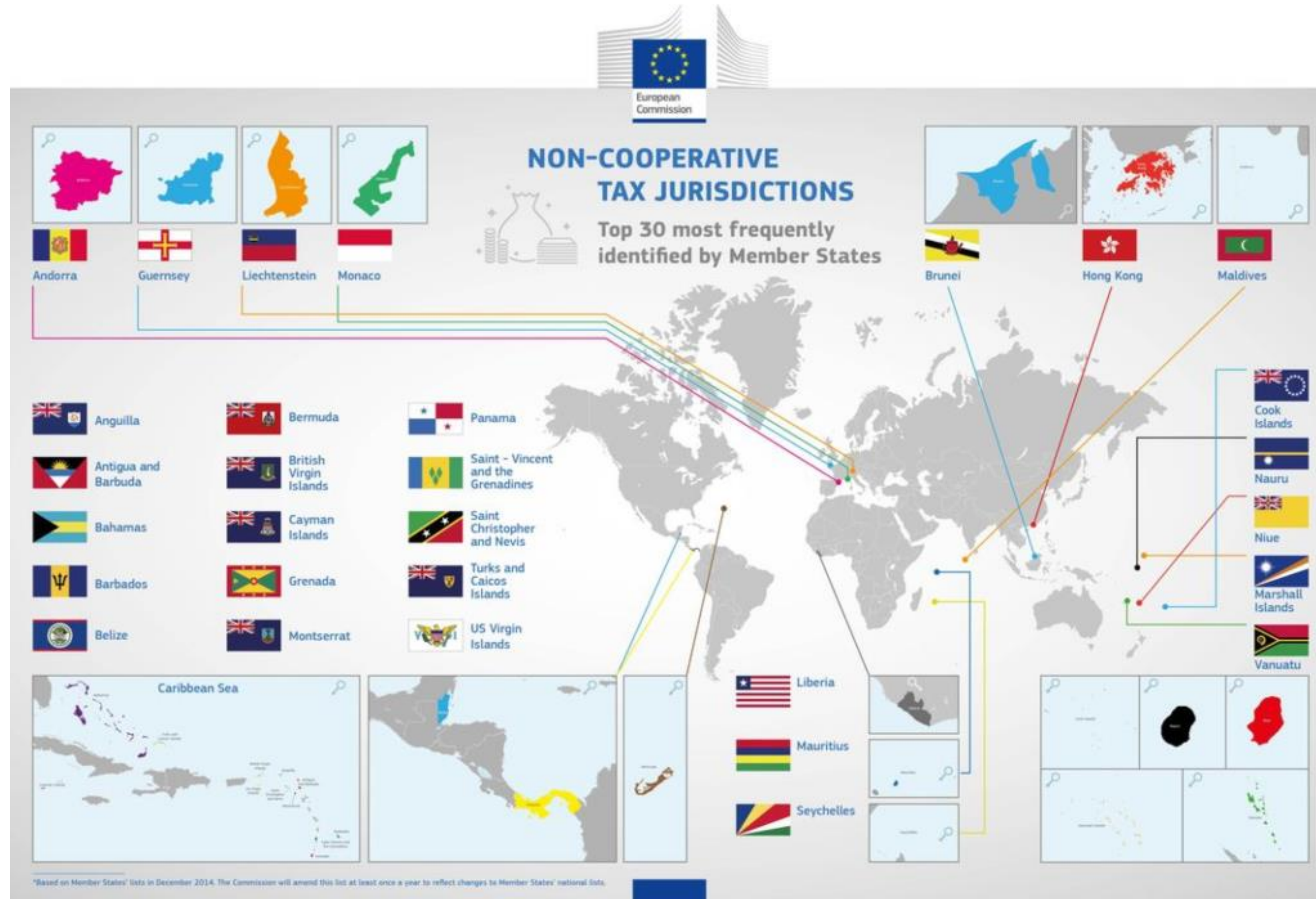
Human Rights Violations, 2014

Human rights violations measured on a scoring system from 0 to 10 (where 10 is worst). This is an aggregated metric on that basis of multiple variables, including: press freedom, civil liberties, political freedoms, human trafficking, political prisoners, incarceration, religious persecution, torture and executions.

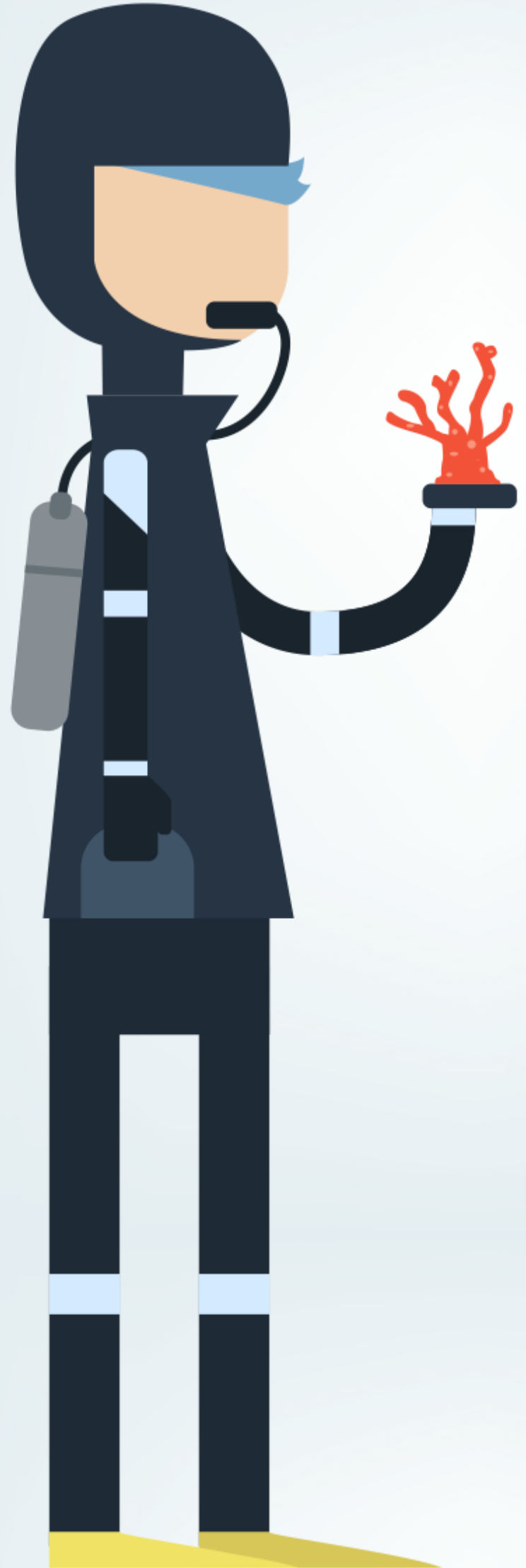


Source: Fund for Peace (Fragile States Index) OurWorldInData.org/human-rights/ • CC BY

Connection avec la nature dans des endroits paradisiaques



Quels effets?



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12 Benefits of Scuba Diving



Increases emotional well-being



Improves blood circulation



Helps to relieve stress



Improves concentration capacity



Reduces blood pressure



Increases strength and flexibility of your muscles



Healing effects of the salty water and Sunlight on skin & bones



Builds long lasting friendships



Feeling of freedom



Increases your confidence and self-esteem

By **WWDAS**
WORLDWIDE DIVE & SAIL

Améliore la circulation sanguine ?

Military Diving Training Improved Arterial Compliance

L. Mourot¹, Y. Golé², P. Louge³, P. Fontanari⁴, J. Regnard¹, A. Boussuges²

Int J Sports Med 2009; 30: 455–460

Arterial stiffness of lifelong Japanese female pearl divers

Hirofumi Tanaka,¹ Tsubasa Tomoto,^{2,3} Keisei Kosaki,³ and Jun Sugawara²

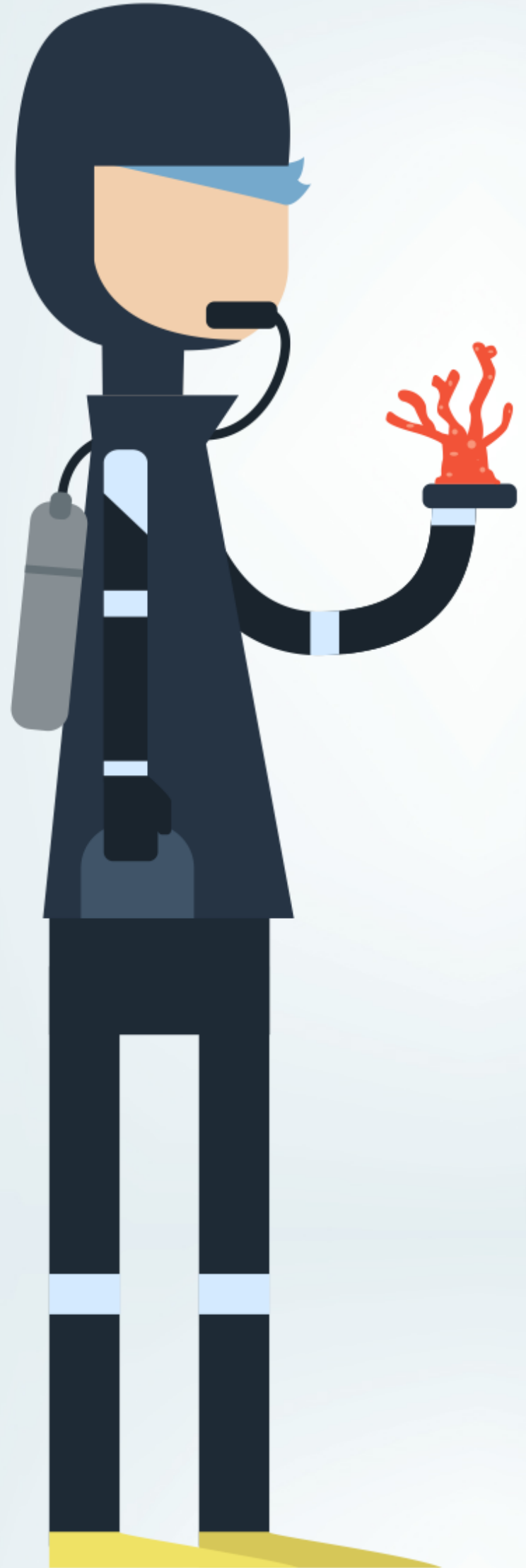
Am J Physiol Regul Integr Comp Physiol 310: R975–R978, 2016.

Œdème pulmonaire d'immersion

Drs BENOÎT DESGRAZ^{a,d}, CLAUDIO SARTORI^{c,e}, MATHIEU SAUBADE^f, FRANCIS HÉRITIER^{b,d} et VINCENT GABUS^{a,d}

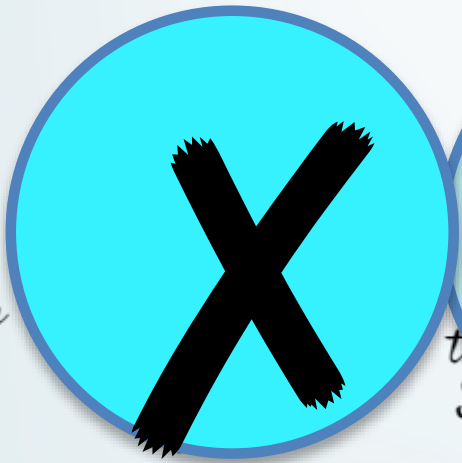
Rev Med Suisse 2017; 13: 1324-8

Quels effets?



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12 Benefits of Scuba Diving

 Increases emotional well-being		 Helps to relieve stress	 Improves concentration capacity
	 Increases strength and flexibility of your muscles		 Healing effects of the salty water and Sunlight on skin & bones
	 Builds long lasting friendships	 Feeling of freedom	 Increases your confidence and self-esteem

By **WWDAS**
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Traitement par le soleil et l'eau salée des maladies de peau et des os



Sun exposure, skin lesions and vitamin D production: evaluation in a population of fishermen*

Roberta Cavalcanti Soriano Coutinho^{1,2}, Aldenir Feitosa dos Santos^{2,3,4}, João Gomes da Costa^{3,5}, Aleska Dias Vanderlei^{2,6}

An Bras Dermatol. 2019;94(3):279-86.

Traitement par le soleil et l'eau salée des maladies de peau et des os



Cochrane Database of Systematic Reviews

Balneotherapy for osteoarthritis (Review)

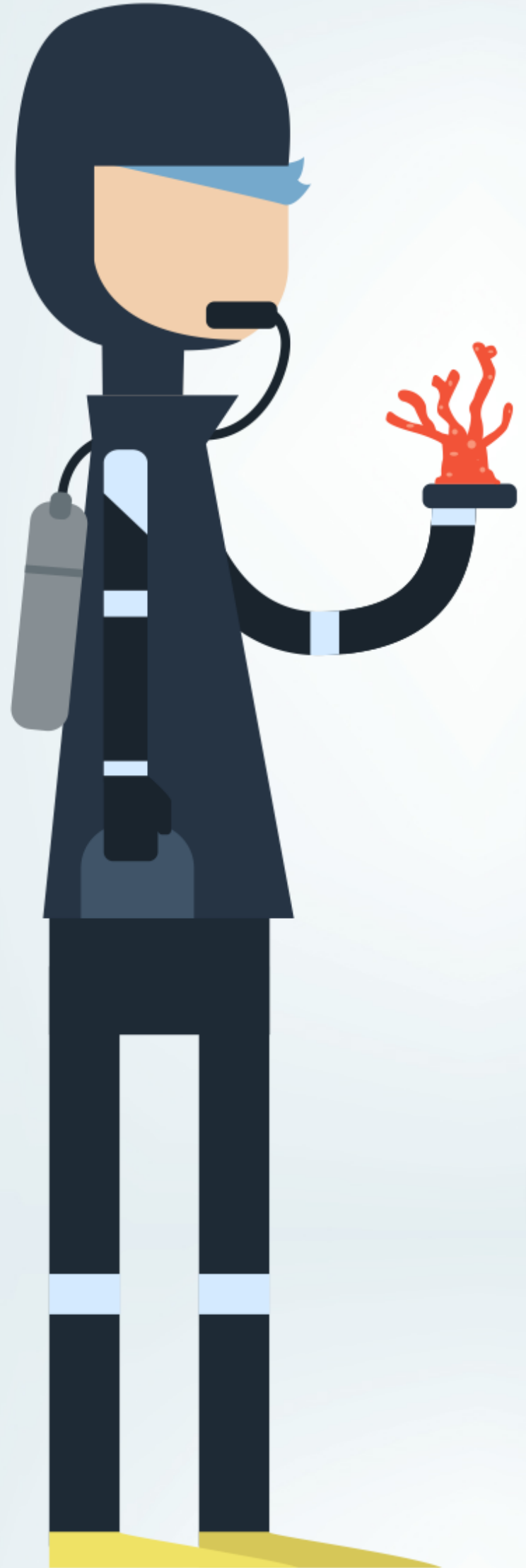
Verhagen AP, Bierma-Zeinstra SMA, Boers M, Cardoso JR, Lambeck J, de Bie R, de Vet HCW



Authors' conclusions

We found silver level evidence (www.cochranemsk.org) concerning the beneficial effects of mineral baths compared to no treatment. Of all other balneological treatments no clear effects were found. However, the scientific evidence is weak because of the poor methodological quality and the absence of an adequate statistical analysis and data presentation. Therefore, the noted "positive findings" should be viewed with caution.

Quels effets?



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12 Benefits of Scuba Diving



Increases emotional well-being





Helps to relieve stress



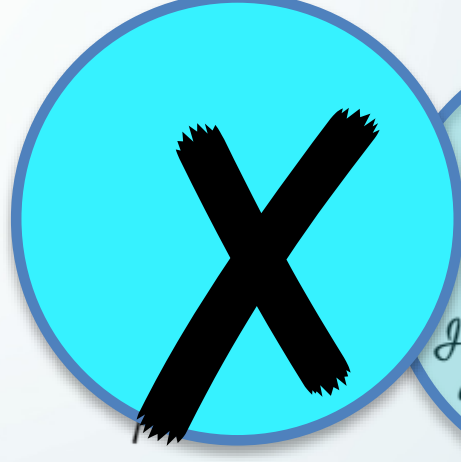


Improves concentration capacity





Increases strength and flexibility of your muscles





Builds long lasting friendships





Feeling of freedom





Increases your confidence and self-esteem



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Amélioration force et fitness

Effort physique en plongée

4.5 à 7 MET (~ course à pied)

Buzzacott P et al Exercise intensity inferred from air consumption during recreational scuba diving. Diving Hyperb Med 2014;44(2):74-8

Buzzacott P et al Estimated workload intensity during volunteer aquarium dives. Occup Med (Lond) 2019;69(3):177-181

Etat de préparation des plongeurs

30% ≥ 50 ans et/ou hypercholestérolémie

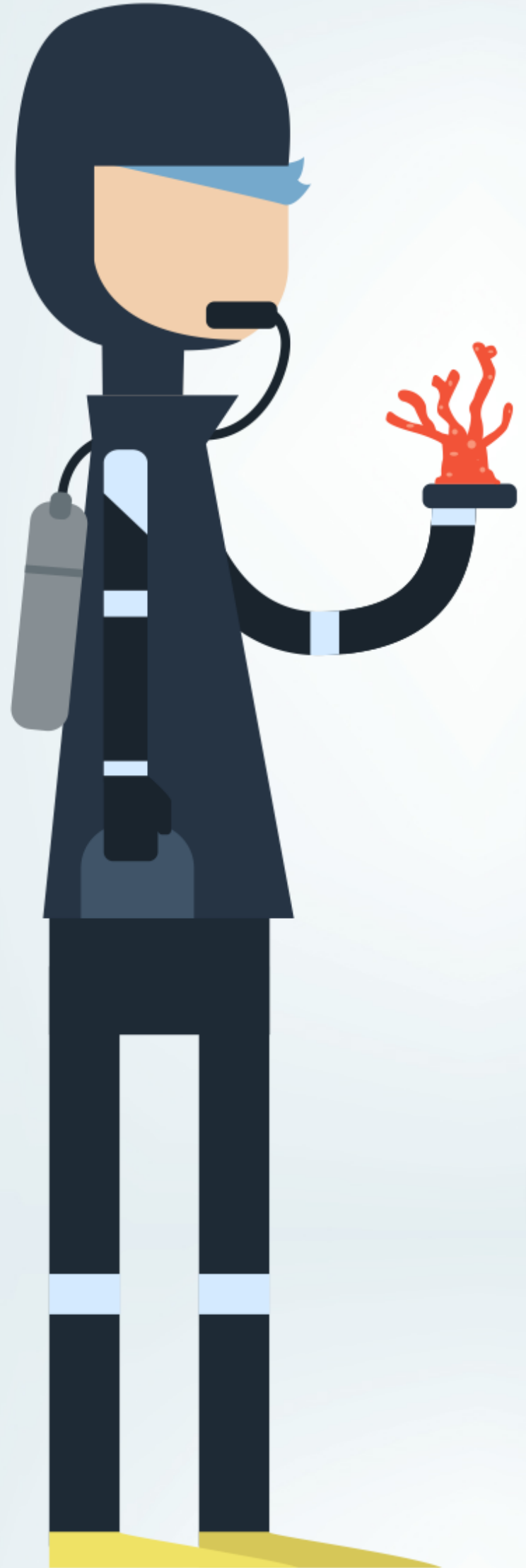
~ 50% en surpoids

> 50% fumée (actuelle ou passée)

32% HTA

Buzzacott P et al Risk factors for cardiovascular disease among active adult US scuba divers. Eur J Prev Cardiol 2018;25(13):1406-1408

Quels effets?



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12 Benefits of Scuba Diving



Increases emotional well-being





Helps to relieve stress





Improves concentration capacity













Builds long lasting friendships



Feeling of freedom



Increases your confidence and self-esteem

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Amélioration de la concentration

Impact of Coordinated-Bilateral Physical Activities on Attention and Concentration in School-Aged Children

BioMed Research International
Volume 2018, Article ID 2539748, 7 pages
<https://doi.org/10.1155/2018/2539748>

Heidi Buchele Harris,¹ Kai Schnabel Cortina,² Thomas Templin,¹
Natalie Colabianchi,¹ and Weiyun Chen ¹

Conclusion. It was concluded that daily brief coordinated-bilateral activities can improve attention and concentration in fifth-grade students over the course of four weeks.

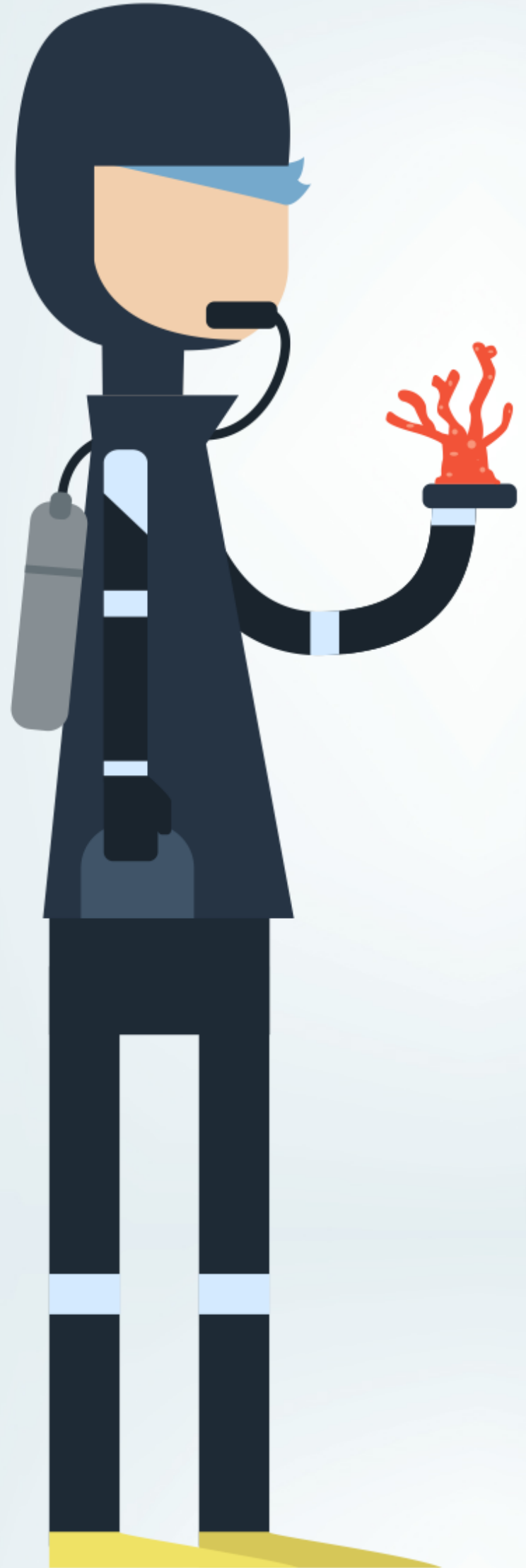
[Asian J Sports Med.](#) 2016 September; 7(3):e38633. doi: [10.5812/asjsm.38633](https://doi.org/10.5812/asjsm.38633).
Published online 2016 August 30. **Research Article**

The Effect of 20 Minutes Scuba Diving on Cognitive Function of Professional Scuba Divers

Seyedeh Faezeh Pourhashemi,¹ Hedayat Sahraei,² Gholam Hossein Meftahi,^{2,*} Boshra Hatef,² and Bahareh Gholipour³

Conclusions: According to our data, it seems that scuba diving as stress stimulant increases cortisol level and therefore reduces cognitive performance after diving.

Quels effets?



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12 Benefits of Scuba Diving



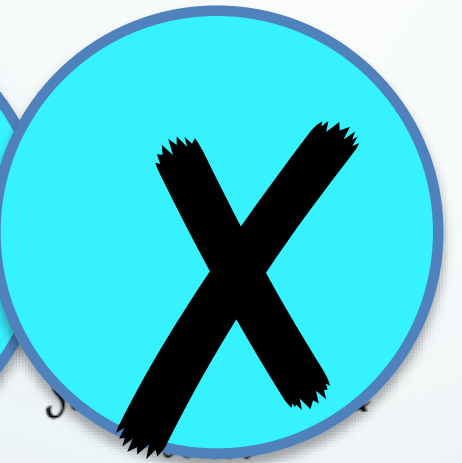
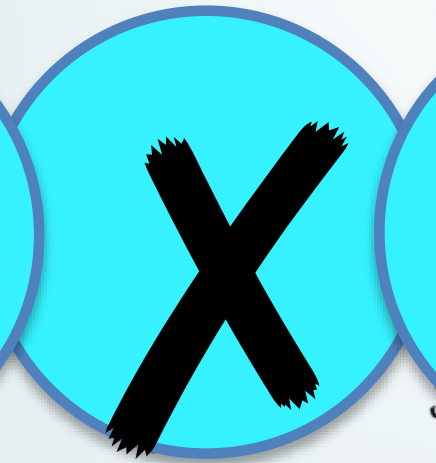
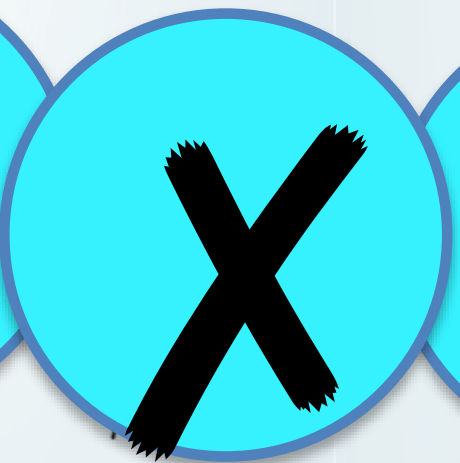
Increases emotional well-being





Helps to relieve stress









Builds long lasting friendships



Feeling of freedom



Increases your confidence and self-esteem

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Amitiés durables



Quels effets?



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12 Benefits of Scuba Diving

 Increases emotional well-being	X	 Helps to relieve stress	X
X	X	X	X
X	X	 Feeling of freedom	 Increases your confidence and self-esteem

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Bien être psychologique

Recreational Diving Practice for Stress Management: An Exploratory Trial

Frédéric Beneton¹, Guillaume Michoud^{2,3}, Mathieu Coulange⁴, Nicolas Laine⁴, Céline Ramdani⁵, Marc Borgnetta⁶, Patricia Breton⁷, Régis Guieu⁸, J. C. Rostain⁸ and Marion Trousselard^{3, 5, 9, 10*}

Citation:

Beneton F, Michoud G, Coulange M, Laine N, Ramdani C, Borgnetta M, Breton P, Guieu R, Rostain JC and Trousselard M (2017) Recreational Diving Practice for Stress Management: An Exploratory Trial. *Front. Psychol.* 8:2193. doi: 10.3389/fpsyg.2017.02193

Conclusions: The practice of a recreational sport improves the mood of subjects reporting the thymic benefits of a physical activity performed during a vacation period. The health benefits of recreational diving appear to be greater than the practice of other sports in reducing stress and improving well-being.

Bien être psychologique

Can scuba diving offer therapeutic benefit to military veterans experiencing physical and psychological injuries as a result of combat? A service evaluation of Depththerapy UK

Alice Morgan , Harriet Sinclair, Alexander Tan, Ellen Thomas and Richard Castle

DISABILITY AND REHABILITATION

<https://doi.org/10.1080/09638288.2018.1480667>

Conclusion: Scuba diving can offer significant therapeutic benefits, particularly for ex-military amputees experiencing co-morbid anxiety and/or chronic psychological adjustment disorders, notably in terms of improvements in social dysfunction and symptomology of depression.

Par quel biais?

Mindfulness Based Stress Reduction ?

« J'ai vraiment vécu une vie formidable ; je regrette seulement de ne pas avoir été là pour en profiter ! »

☞ Réorienter son attention de façon ciblée vers un ou plusieurs éléments du présent (respiration, sensations, bruits,...)

Mindfulness-based treatments for posttraumatic stress disorder: a review of the treatment literature and neurobiological evidence

J Psychiatry Neurosci 2018;43(1)

Jenna E. Boyd, MSc; Ruth A. Lanius, MD, PhD; Margaret C. McKinnon, PhD, CPsych

Mindfulness-Based Interventions for Anxiety and Depression

Stefan G. Hofmann, PhD*, Angelina F. Gómez, BA

Psychiatr Clin N Am 40 (2017) 739–749

Autres techniques psycho - cognitives (EMDR) ?

Par quel biais?

Psycho - pharmacologie

Increased plasma β -endorphin immunoreactivity in scuba divers after submersion

MICHAEL L. ADAMS, NORRIS W. EASTMAN,
RICHARD P. TOBIN, DALE L. MORRIS, and
WILLIAM L. DEWEY

Med Sci Sports Exer 1987;19(2):87-90

Effects of Diving Experience on Submersion-induced Increases in Plasma Levels of β -Endorphin in Scuba Divers

H. L. TRIPATHI*, N. W. EASTMAN†, D. A. BRASE and W. L. DEWEY*

NEUROPEPTIDES

Neuropeptides (1991) **18**, 223-227
© Longman Group UK Ltd 1991

Des risques?

Bien-être subjectif et régulation émotionnelle dans les conduites à risque. Cas de la plongée sous-marine

A. BONNET ⁽¹⁾, J.-L. PEDINIELLI ⁽¹⁾, F. ROMAIN ⁽²⁾, G. ROUAN ⁽¹⁾

L'Encéphale, 2003 ; XXIX : 488-97, cahier 1

Excès de prise de risque

Les plongeurs avec des pratiques « à risque » ont des scores en émotions négatives supérieurs aux autres.

👉 Apparition de conduites à risque en plongée justement chez ceux pour lesquels la plongée aurait un effet thérapeutique???

Des risques?

Bonnaire C, Varescon I. Impact des conduites à risques et des addictions sur la santé In Psychologie de la santé (2012), pages 87 à 110

Adès J, Lejoyeux M, Tassain Y. Sémiologie des conduites de risque. Encyclopédie Médico-Chirurgicale (Paris–France), Psychiatrie 1994, 37-114-A-70

Risque d'addiction?

- Relation conduites à risque et addiction (Adès, Bonnaire et Varescon)
- Psychopharmacologie?

Conclusions

1) La plongée est une dangereuse activité addictogène, qui menace la planète et soutient des gouvernements douteux.



2) La plongée est une activité relaxante, apaisante, ressourçante et déstressante.



Merci pour votre attention!

