소강당

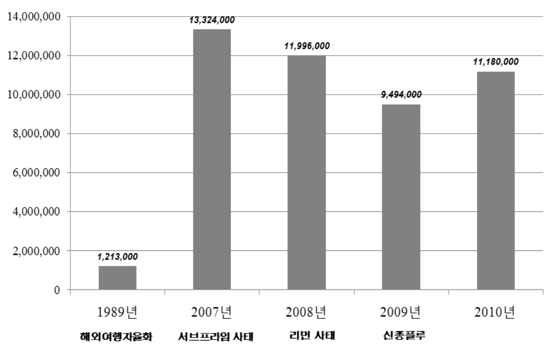
일차진료에서 적용 가능한 새로운 치료

홍명호 | 추병원

해외여행 안전을 위한 여행의학의 최신지견 - 비행시차와 고산병을 중심으로

김도훈 고려대학교 안산병원

해외 여행객의 증가…



항공여행과 관련된 스트레스 요인

- 낮은 기압 및 습도
- 저산소증
- 진동 및 소음
- 난기류에 의한 기체 흔들림
- 시차로 인한 신체 부조화 현상(Jet lag)
- 장시간 여행으로 인한 피로감(Travel fatigue)
- 혈전색전증 및 이코노미 클래스 증후군
- 항공기 탑승 시까지 받는 스트레스

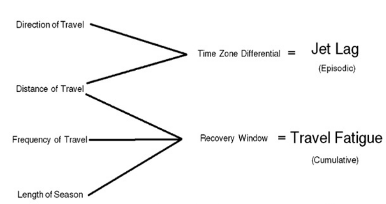
빠른 시차적응의 중요성

- Tourist
- business executives
- sports teams
- tour operators
- flight crews

선생님, 출장 가는데 비행기에서 잠 좀 잘 수 있게 약 좀 주세요…

"Jet lag, wind burn, sun stroke, Doc—you name it."

Jet lag and Travel fatigue in athletes



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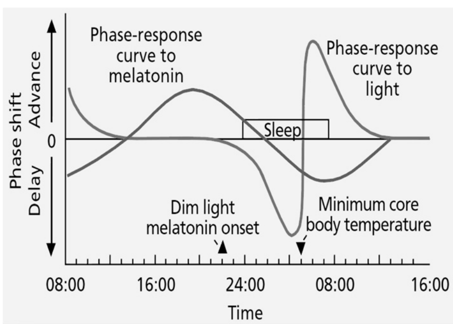
비행시차 예방 및 관리 전략

Table 42.1 Behavioral Methods of Adjusting Circadian Rhythm

Method	Pros	Cons	Efficacy
Sleep schedule	Inexpensive, easily available	Inconvenient, especially for longer time changes	Good, if able to achieve adjustment
Sunlight exposure	Inexpensive, easily available	Requires scheduling	Good
Phototherapy	Convenient	Some devices are bulky, expensive	Good
Exercise	Inexpensive, easily available Other health benefits	Requires scheduling, effort	Inconclusive data
Diet	Inexpensive, easily available	Inconvenient, requires careful planning	Recent studies suggest little benefit

A schematic human phase-response curve to light (blue line) and to exogenous melatonin (red line)

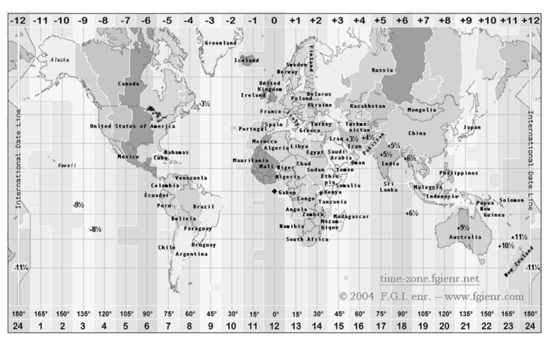


Light exposure can help or hurt, depending on the timing

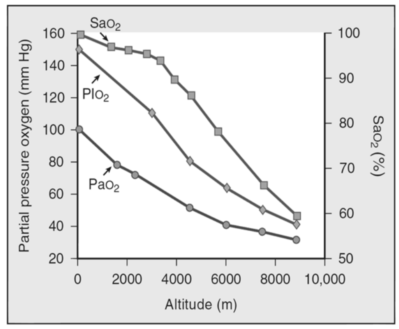
- Inadvertent shifting of circadian phase in the wrong direction ("antidromic re-entrainment") is common and delays circadian reacclimation and the dissipation of jet lag symptoms.

Example. From chicago to Paris

Example. From chicago to Paris (seven time zones to the east)



High-Altitude Medicine



Increasing altitude results in decreasing inspired Po 2 (Pio 2), arterial Po 2 (Pao 2), and arterial oxygen saturation (Sao 2). Note that the difference between Pio 2 and Pao 2 narrows at high altitude because of increased ventilation and that Sao 2 is well maintained while awake until over 3000 m (9843 feet). (Data from Morris A: Clinical pulmonary function tests: A manual of uniform lab procedures, Salt Lake City, 1984, Intermountain Thoracic Society; and Sutton JR, Reeves JT, Wagner PD, et al: Operation Everest II: Oxygen transport during exercise at extreme simulated altitude, J Appl Physiol 64:1309, 1988.)

(Data from Morris A: Clinical pulmonary function tests: A manual of uniform lab procedures, Salt Lake City, 1984, Intermountain Thoracic Society; and Sutton JR, Reeves JT, Wagner PD, et al: Operation Everest II: Oxygen transport during exercise at extreme simulated altitude, J Appl Physiol 64:1309, 1988.)

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Clinical Characteristics of High-Altitude Illnesses

	Clinical Classification			
	HAH	**Mild AMS**	**Moderate to Severe AMS**	**HACE**
Symptoms	Headache only	Headache plus one more symptom (nausea/vomiting, fatigue/lassitude, dizziness or difficulty sleeping) All symptoms of mild severity	Headache plus one or more symptoms (nausea/vomiting, fatigue/lassitude, dizziness or difficulty sleeping) Symptoms of moderate to severe intensity	±Headache Worsening of symptoms seen in moderate to severe AMS
LL-AMS score *	1-3, headache only	2-4	5-15	
Physical signs	None	None	None	Ataxia Altered mental status
Findings	None	None	Antidiuresis Slightly increased body temperature Slight desaturation Widened A-a gradient Elevated ICP White matter edema (CT, MRI)	HAPE common: positive chest radiograph, rales, dyspnea at rest Elevated ICP White matter edema (CT, MRI)
Pathophysiology	Unknown; cerebral vasodilation, trigeminovascular system? ±	Unknown; same as HAH?	Vasogenic edema; cytotoxic edema?	Advanced vasogenic cerebral edema; cytotoxic edema?

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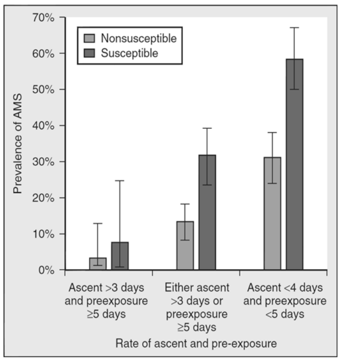
Incidence of Altitude Illness in Various Groups

Study Group	Number at Risk per Year	Sleeping Altitude (m [ft])	Maximum Altitude Reached (m [ft])	Average Rate of Ascent *	Percent With AMS	Percent With HAPE and/or HACE
		~2000 (6562)			18-20	



The prevalence of acute mountain sickness (AMS) and 95% confidence intervals in nonsusceptible (blue bars) and susceptible (red bars) mountaineers in relation to the state of acclimatization defined as slow ascent (more than 3 days), fast ascent (3 days or less), preexposed (5 days or more above 3000 m [9843 feet] in the preceding 2 months), and not preexposed (4 days or less above 3000 m [9843 feet] in the preceding 2 months). (Reprinted from Schneider M, Bernasch D, Weymann J, et al: Acute mountain sickness: Influence of susceptibility, preexposure, and ascent rate, Med Sci Sports Exerc 34:1886, 2002.)

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Risk Categories for Acute Mountain Sickness

Risk Category	Description
Low	•Individuals with no prior history of altitude illness and ascending to <2800 m (9186 feet) •Individuals taking >2 days to arrive at 2500-3000 m (8202-9843 feet) with subsequent increases in sleeping elevation <500 m (1640 ft)/day and an extra day for acclimatization every 1000 m (3281 feet)
Moderate	•Individuals with prior history of AMS and ascending to 2500-2800 m (8202-9186 feet) in 1 day •No history of AMS and ascending to >2800 m (9186 feet) in 1 day •All individuals ascending >500 m (1640 ft)/day (increase in sleeping elevation) at altitudes above 3000 m (9843 feet) but with an extra day for acclimatization every 1000 m (3281 feet)
High	•History of AMS and ascending to >2800 m (3281 feet) in 1 day •All individuals with a prior history of HAPE or HACE •All individuals ascending to >3500 m (11,483 feet) in 1 day •All individuals ascending >500 m (1640 ft)/day (increase in sleeping elevation) above >3000 m (9843 feet) without extra days for acclimatization •Very rapid ascents (e.g., <7-day ascents of Mt Kilimanjaro)

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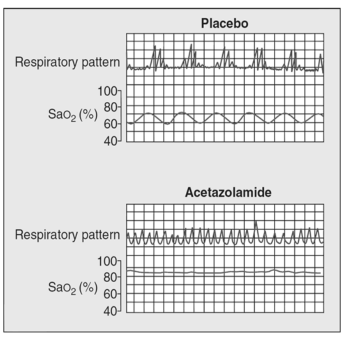

Respiratory patterns and arterial oxygen saturation (Sao 2) with placebo and acetazolamide in two sleep studies of a subject at 4200 m (13,780 feet). Note pattern of hyperpnea followed by apnea during placebo treatment, which is changed with acetazolamide. (Modified from Hackett PH, Roach RC, Harrison GL, et al: Respiratory stimulants and sleep periodic breathing at high altitude: Almitrine versus acetazolamide, Am Rev Respir Dis 135:896, 1987.)

(Modified from Hackett PH, Roach RC, Harrison GL, et al: Respiratory stimulants and sleep periodic breathing at high altitude: Almitrine versus acetazolamide, Am Rev Respir Dis 135:896, 1987.)

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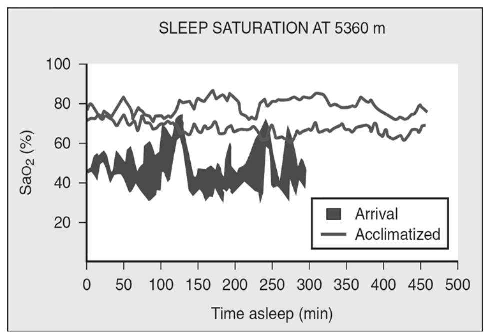

Sleep oxygenation improves with acclimatization to same altitude. Top line is maximum, and bottom line is minimum arterial oxygen saturation (Sao 2) in an acclimatized person. Shaded area is maximum and minimum Sao 2 values for new arrival at 5360 m (17,585 feet). (Modified from Sutton JR, Gray GW, Houston CS, et al: Effects of acclimatization on sleep hypoxemia at altitude. In West JB, Lahiri S, editors: High altitude man , Bethesda, Md, 1984, American Physiological Society, pp 141-146.)

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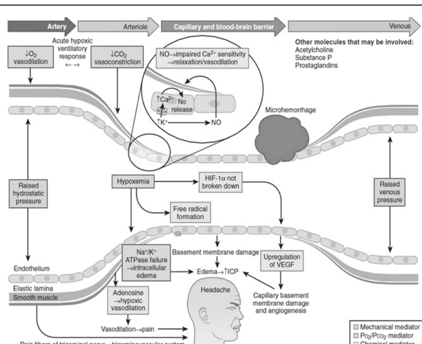

Proposed pathophysiology of acute mountain sickness. HIF, Hypoxia-inducible factor; ICP, intracranial pressure; NO, nitric oxide; VEGF, vascular endothelial growth factor. (Modified from Wilson MH, Newman S, Imray CH: The cerebral effects of ascent to high altitudes, Lancet Neurol 8:175, 2009.)

(Modified from Wilson MH, Newman S, Imray CH: The cerebral effects of ascent to high altitudes, Lancet Neurol 8:175, 2009.)

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An individual has AMS as assessed by the Lake Louise self-assessment scoring system when they fulfill the following criteria (a) recent ascent in altitude, (b) have a headache, and (c) have a total symptom score above 3

Symptoms:	
1. Headache:	
No headache	0
Mild headache	1
Moderate headache	2
Severe, incapacitating	3
2. GI symptoms:	
No GI symptoms	0
Poor appetite or nausea	1
Moderate nausea or vomiting	2
Severe nausea and vomiting incapacitating	3
3. Fatigue/weak:	
Not tired or weak	0
Mild fatigue/weakness	1
Moderate fatigue/weakness	2
Severe fatigue/weakness, incapacitating	3
4. Dizzy/lightheadedness:	
Not dizzy	0
Mild dizziness	1
Moderate dizziness	2
Severe, incapacitating	3
5. Difficulty sleeping:	
Slept well as usual	0
Did not sleep as well as usual	1
Woke many times, poor night's sleep	2
Could not sleep at all	3
Total symptom score:	

Clinical assessment:	
6. Change in mental status:	
No change	0
Lethargy/lassitude	1
Disoriented/confused	2
Stupor/semiconsciousness	3
7. Ataxia(heel to toe walking):	
No ataxia	0
Maneuvers to maintain balance	1
Steps off line	2
Falls down	3
Can't stand	4
8. Peripheral edema:	
No edema	0
One location	1
Two or more locations	2
Clinical assessment score:	
Total score:	

주사 방법

- 부위 표시. 주사 바늘 뚜껑, 볼펜 심 구멍
- 장갑 : 소독된 부위 촉지 가능
  - 비관절 주사 – 의사 엄지 손가락 베타딘 소독
- 소독하고 2분간 건조
- 저항 느끼면, 재 진입
- 주사기 흡입 확인
- 건이나 인대 직접 주사 금지

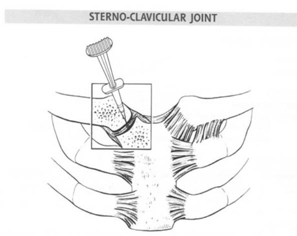
Subacromial : impinge, bursitis

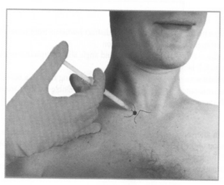
Steroid + Lidocaine

below midpoint of acromion

below posterior lateral aspect of acromion

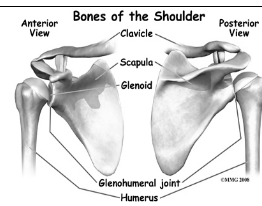
Sterno-clavicular joint



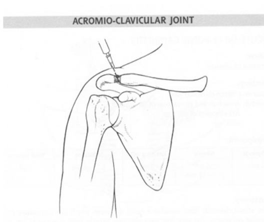


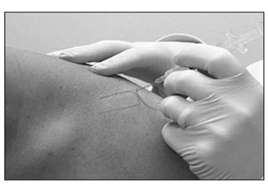
- Acute or chronic capsulits : Pain on it.
- Pain on retraction and protraction, full elevation of arm, clicking
- Clavicle med. 끝 촉진
- 환자 앉고, slight lat. rotation
- 관절에 직각으로 주사
- Steroid + lidocaine 1cc

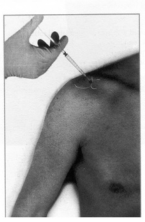
GHJ



- 오십견, OA, RA
- Hyal, Prolo Tx
- 뒤쪽. 앉고, 팔 내회전, 내전
- Acromion posterior margin 촉지
  아래 1 cm, medial 1cm. 뼈 부딪힌 후 내외로
- coracoid process 방향으로 주사







- Acute or chronic capsulitis :
  압통, horizontal add 통증
- 스테로이드+마취 1cc
- ACJ 촉지 : Clavicle 끝 촉지 상태, 환자의 팔을 위 아래로 하면 쉽다
- superior or anterior superior 방향에서 직각으로

Elbow

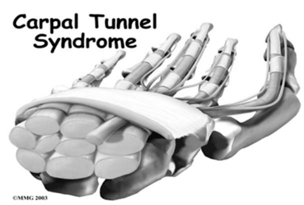
Prolo, PRP,> Steroid

De Quervain's Tenosynovitis

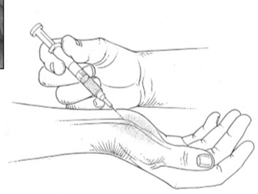
- first extensor compartment

Carpal Tunnel Injection

- Use the palmaris longus as your landmark
- Inject "ulnar" to palmaris longus, FCR



Carpal Tunnel Injection

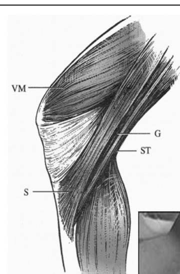


Steroid + Lidocaine

Trigger Finger

- Tenosynovitis of flexor digitorum tendons
  구부렸다 펼 때, 딸각
- Nodule/thickening, 1st annular pulley
- 0.5 cc lidocaine, 0.5 cc corticosteroid
  - 1 cm distal to distal palmar crease
  - 압통 근처
- Consider DM, RA

Pes anserine bursa



- Medial,
  Knee jt 보다 아래쪽
  압통점에
- Steroid + Lidocaine

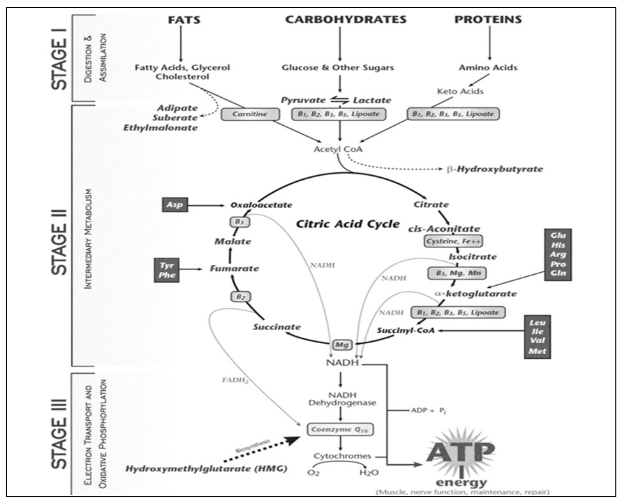
Morton’s Neuroma

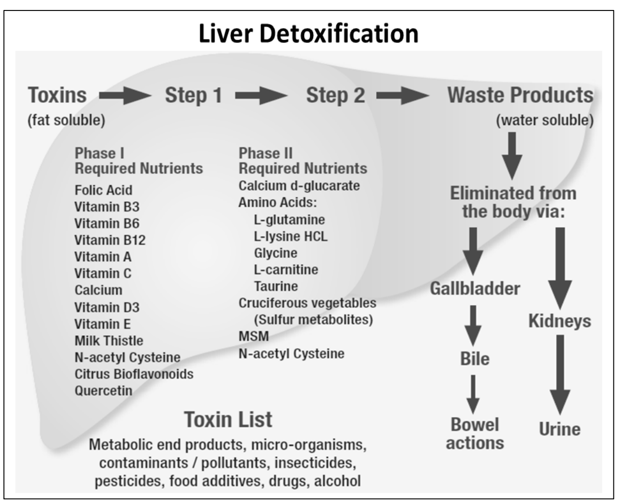
- Injection is on dorsum of foot, in-between metatarsel heads at point of maximum tenderness
- ‘마이 아파’

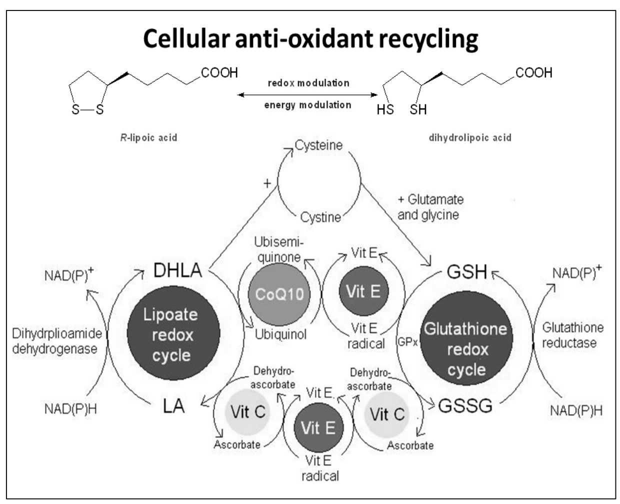
증상별 건강기능식품의 적용

김영상 차의과학대학교

1. 만성피로 / 두통







Vitamin C

- Highest concentrations in the cortex and the medulla of the adrenal gland.
- It is a cofactor in the production of both catecholamines and adrenal steroids.
- ↓ oxidative stress upon the mitochondria
- ↓electron leakage which has been associated with fibromyalgia & CFS

Magnesium

- A cofactor for most enzymatic activity in the body
- Essential for metabolism of carbohydrates and protein
- Regulate the acid-base balance
- Regulate calcium and potassium uptake and balance – maintains vascular tension
- Act as a potent vasodilator
  - Lowers BP – careful !!

- 편두통
  - 편두통 환자의 50%에서 두통 발작이 있을 때 마그네슘 농도가 낮음
  - 일일 Mg 300mg을 보충
- 월경전 증후군과 월경통
  - Mg 300~600mg/d 보충
  - 마그네슘을 복용했을 때에도 효과는 있지만 비타민 B6와 병용하면 훨씬 더 나은 효과
  - But, 마그네슘은 월경통에는 효과가 있으나 생리 전 증후군의 치료에 위약보다 낫다는 근거가 미약
- 섬유근통 환자의 증상개선에 도움을 줄 것이라는 보고
  - Malic acid 600mg과 Mg 150mg의 섭취가 도움

- 만성피로증후군 환자에서 피로와 관련된 증상의 개선
  - 만성피로를 호소하는 사람의 적혈구 내의 Mg 농도가 낮았음
  - 15명의 환자에게 6주 동안 Mg sulfate(1gm/2ml)을 근육 주사 시 호전
  - 피로환자에서 Mg 내복 시 피로가 경감

아연

- 황체호르몬, 여성호르몬 및 남성호르몬을 형성하는 과정에 관여
- 저성선증, 임신의 유지
- 단백질의 복제: 성장과 발육
- 스테로이드 호르몬의 수용체 작용과 밀접한 연관

망간

- 에너지 생성, 단백질 대사, 골형성, L-도파민 , 콜레스테롤, mucopolysaccharides의 생성
- 세포내 많은 효소에 존재. 특히 미토콘드리아에 많으며, 항산화 효소인 manganese—containing superoxide dismutase
- 많은 양의 칼슘, 인은 망간의 흡수를 억제,
- 유제품, 육류, 음료수 등을 많이 먹는 경우 망간 보충 필요
- 망간은 biotin, thiamine (B1), vitamin C, choline 을 사용하기 위한 효소를 활성화.
- 당분해시 조효소 작용, 당대사에 관여
- 피로, 기억력 감퇴(by protecting brain tissue and helping oxygenation), 신경과민, 안절부절, 어지럼증에 도움

IVNT example

- 1mL B complex 100
- 1mL Hydroxocobalamin 1000ug/mL
- 3mL Mg chloride 20%
- 1mL 10 IU oxytocin
- 10mL Arginine (200mg/mL)
- 5mL 1% procaine
- 2mL Ca gluconate 10%
- 2mL Glutathione 300mg/mL
- 25mL sterile water

Sexual Nutrition

- Improve circulation
  - Hormone transport, toxin removal
- Optimize Hormones
- Increase metabolism
  - Fat burning, muscle enhancing → physical performance
- Improve mentation/decrease stress
  - Relax, calm and enhance sexual feelings