

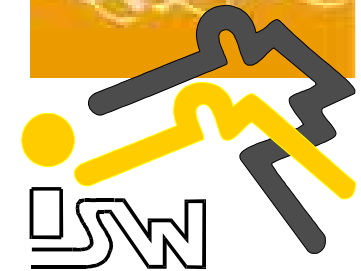
**S.I.T.E.M.S.H**

**INTERNATIONAL SOCIETY FOR SKIING TRAUMATOLOGY AND WINTER SPORTS MEDICINE**



**S.I.T.E.M.S.H**

# Drug Use in Alpine Skiing: Benefits and Harm

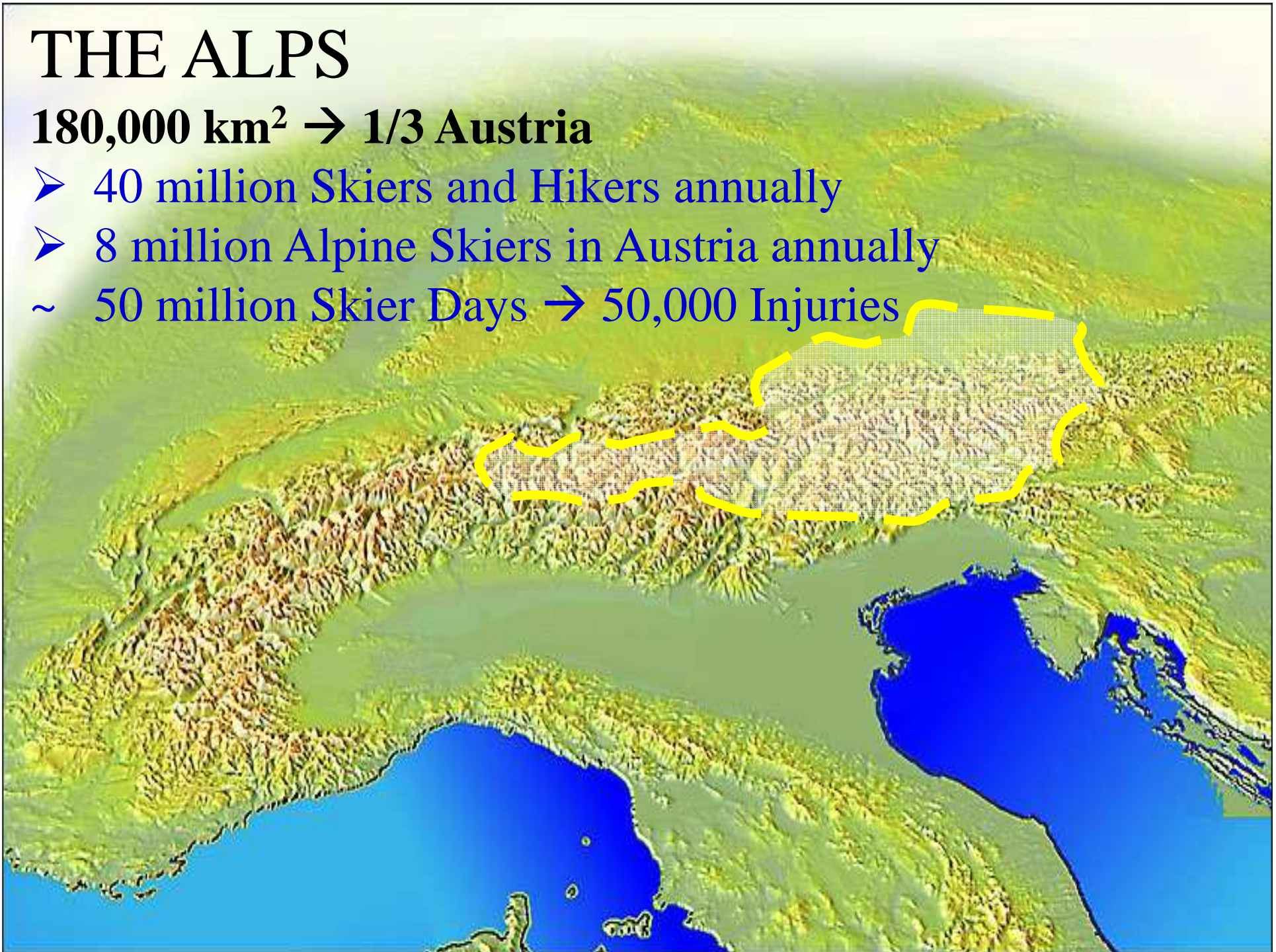


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# THE ALPS

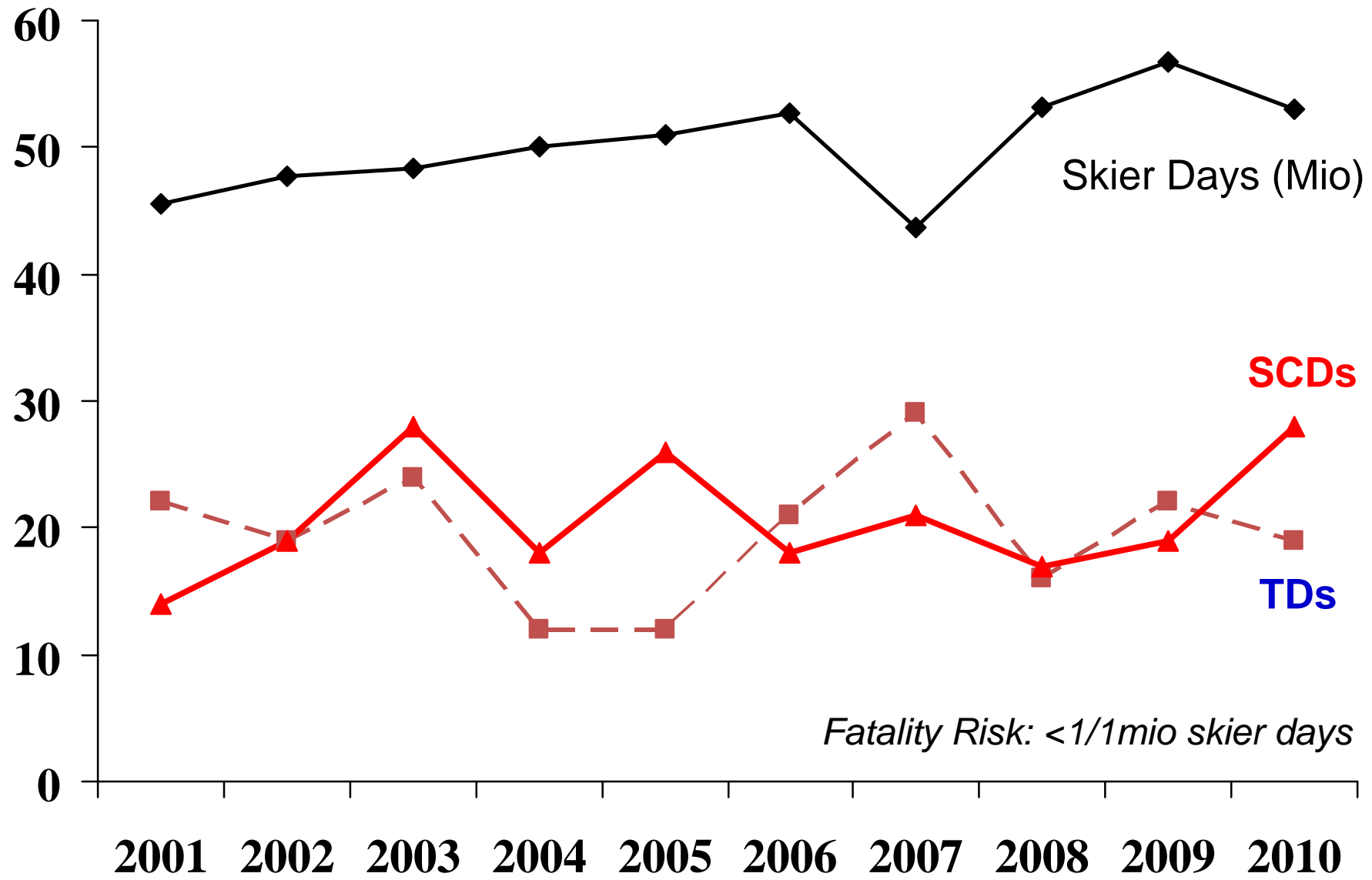
**180,000 km<sup>2</sup> → 1/3 Austria**

- 40 million Skiers and Hikers annually
- 8 million Alpine Skiers in Austria annually
- ~ 50 million Skier Days → 50,000 Injuries



# Alpine Skiing

Frequency



Year

# Do Drugs contribute to the Risk of Death and Injury in Skiers?

- PREVALENCE OF CV RISK FACTORS AND MUSCULOSKELETAL PAIN IN SKIERS
- FREQUENCY OF MEDICATION USE
- BENEFITS OR HARM?

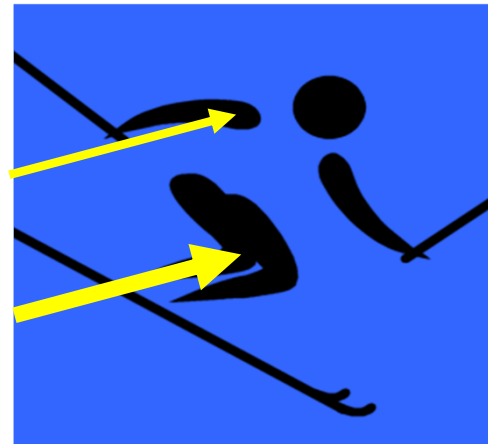
# Health and Life-Style Characteristics of Alpine Skiers compared to an age-matched General Population



	N = 1259 <i>Skiers</i>		<i>General Population</i>	
	<i>male</i>	<i>female</i>	<i>male</i>	<i>female</i>
Physical activity (>2h/wk)	52	49	28	28
Smokers (yes, %)	10	7	28	19
Hypertension (yes, %)	26	11	30	14
Hypercholesterolemia (yes, %)	36	26	34	28
Diabetes (yes, %)	5	3	6	4

# MUSCULOSKELETAL PAIN COMPLAINTS IN SKIERS

Regularly (5%)  
Occasionally (86%)



Regularly in ~50% of Skiers > 50 years

# Downhill Skiers (Tirol 2014)

N = 819 (56% males, 44% females)

Age: 7 to 83 years

## Characteristics

	<b>Males</b>	<b>Females</b>
Physical activity (h/week)	6.5	5.7
Smokers (%)	17	11
Alcohol during the skiing day (%)	30	16
Alcohol the evening before (%)	64	50
<b>Medication Use (%)</b>	<b>22</b>	<b>20</b>

***Skiers > 50 years: 50% use medications***

*For Comparison:*

## Mountaineers (Tirol 2010)

N = 1020 (55% males, 45% females)

Age: 6 to 87 years

### Characteristics

	<b>Males</b>	<b>Females</b>
Smokers (%)	19	14
Alcohol during activity (%)	32	14
Alcohol the evening before (%)	67	54
<b>Medications (%)</b>	<b>28</b>	<b>24</b>
Physical activity (%)		

***Mountaineers > 50 years: 56% use medications***

# Downhill Skiers (Tirol 2014)

*N = 819 (56% males, 44% females)*

Medication use: N = 180

## Types of Medication

Antihypertensive drugs

Non-steroidal anti-inflammatory drugs

Platelet aggregation inhibitors and anticoagulants

Statins

Hypnotics

*H2-Blockers*

*β<sub>2</sub>-Agonists*

*Antidiabetics*

*Cortisone*

*Antibiotics*

*Thyroxine*

## Downhill Skiers (Tirol 2014)

*N = 819 (56% males, 44% females)*

Medication use: N = 180

*That means for the overall Skier Population (Austria):*

**> 100,000 skiers daily - taking drugs!!**

### **Alcohol intake**

On the skiing day: 27%

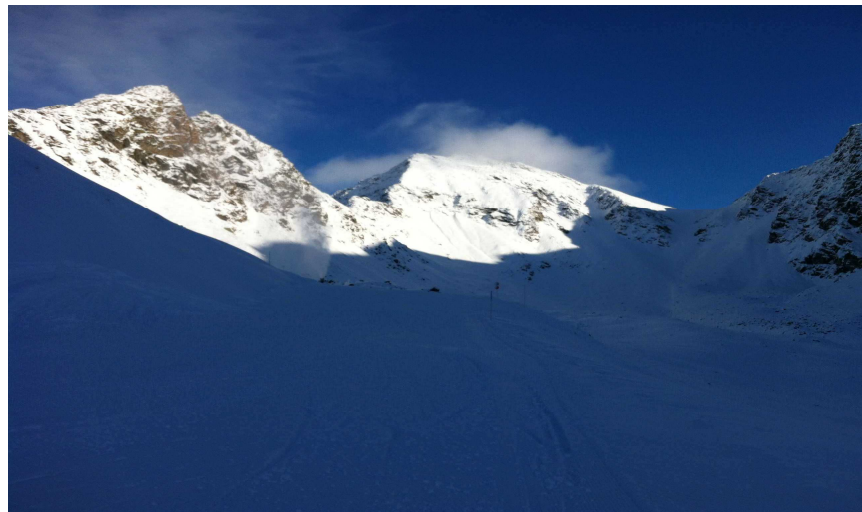
In the evening before: 62%

**Exposure to altitude: 100%**

# Cardiovascular Drugs

Importance of regular administration  
to avoid CV events during skiing

But: *complicated by holiday conditions;  
interactions with altitude and exercise?*



Musculoskeletal Pain increases the Risk for Falls – especially in older people!

Overall, 86% of skiers occasionally suffer from musculoskeletal pain (*regularly 50% > 50 years*)

Thus: Careful use of pain medication may be beneficial

# Predictors for Falls during Skiing

N ~ 2000 Skiers and Snowboarders  
*Burtscher et al. 2007*

	<b>Downhill Skiers</b>	<b>Snowboarders</b>
	Odds Ratio (95%CI)	

Age	0.8 (0.7-0.8)	0.6 (0.4-0.8)
Altitude >2000 m	1.6 (1.2-2.2)	
Poor skiing skills	1.5 (1.2-1.9)	
<b>Alcohol consumption</b>	<b>1.4 (1.1-1.9)</b>	<b>3.7 (1.8-7.7)</b>
Smoking	1.4 (1.1-1.8)	
High speed skiing	1.4 (1.1-1.8)	1.8 (1.1-2.9)
Soft snow conditions	1.3 (1.0-1.7)	

# Drug – Alcohol – Interactions

## Antihypertensive Drugs

*e.g. Nitrates, Hydralazine, Calcium Channel Blockers,  $\beta$ -Blockers*

→ Orthostatic Hypotension → Risk of falling → Injuries  
→ Arrhythmias → Sudden Death?

Side effects may even be aggravated by  
Altitude and Exercise!

# Drug – Alcohol – Interactions

## Non-Steroidal Anti-inflammatory Drugs

*e.g. Ibuprofen, Naproxen, Aspirin*

→ Traumatic Bleeding

→ Nausea, Ulcers, Stomach Bleeding

# Drug – Alcohol – Interactions

## Hypnotics, Sleeping Pills

e.g. flurazepam, nitrazepam, temazepam, triazolam

→ Increase sedative effects

→ Decrease attention, reaction time → Collisions, Falls

# CONCLUSION

> 20% of Skiers (> 100,000 per day) use Drugs  
mostly for Treatment or Prevention of Disease/Risk factors/Pain

Beneficial and Necessary with Careful  
and Individualized Application

Harmful with Careless use of Drugs  
and when Combined with Alcohol

No Drug Use for Performance enhancement (DOPING)

**Urgently needed:**

**More Specific Education  
and Medical Advice**

