

*diver*

# Aging population gives new challenges

Olav Sande Eftedal, Equinor

*diver*  
**1) Is the population really aging?**

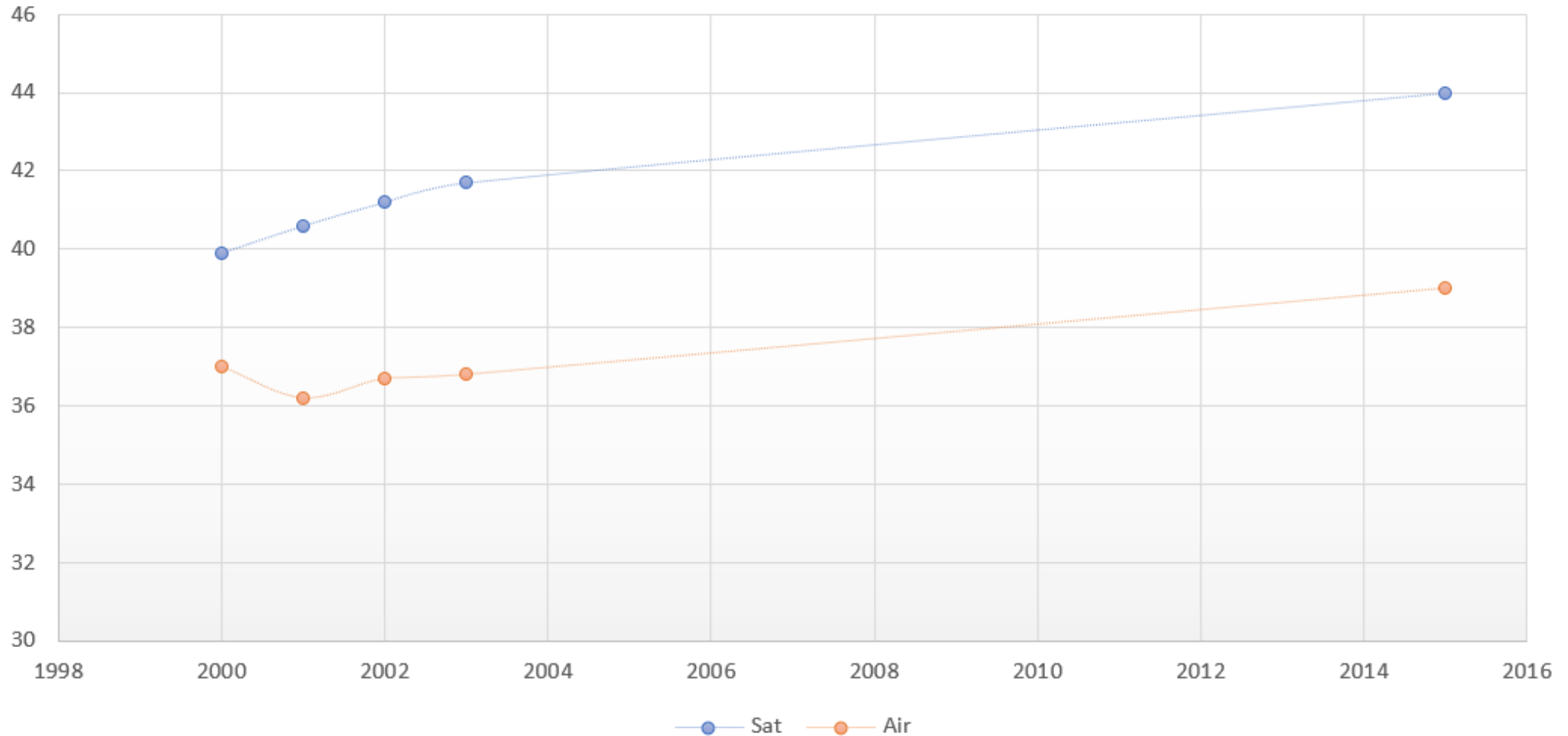
*health related*  
**2) What challenges (if any) come with an aging diver population?**

**3) How can we handle these challenges?**



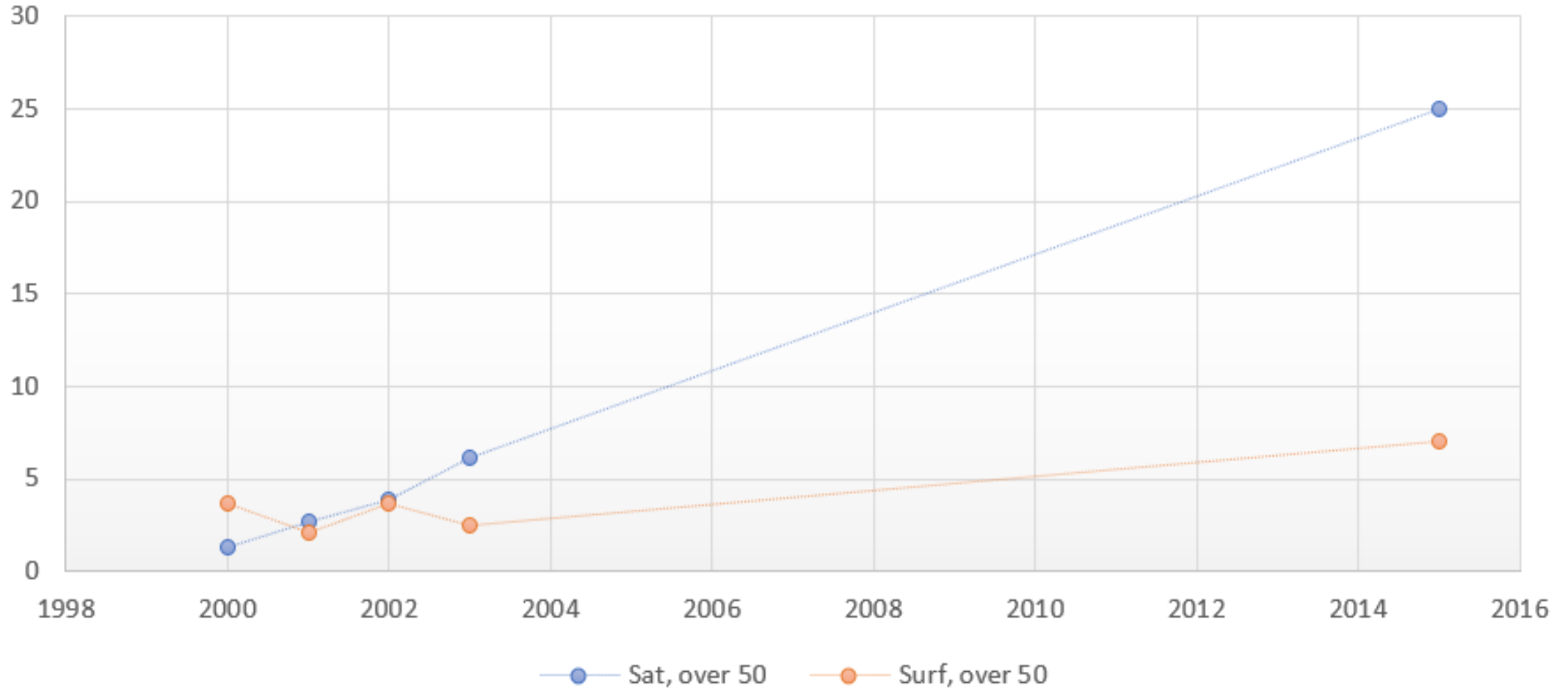
# Is the diver population really aging?

Average age of divers



# Is the diver population really aging?

Divers > 50 years [%]



Is the diver population really aging?

**YES**

# What health related challenges come with an aging diver population?

**DCI risk seems to increase with age**

- **More venous bubbles**
- **Decreased tissue perfusion**
- **Increased body fat %**
- **Previous DCI**

# DCI risk reduction

## Surface oriented diving

- Recognise age as a risk factor
- Consider using table for longer BT

## Saturation diving

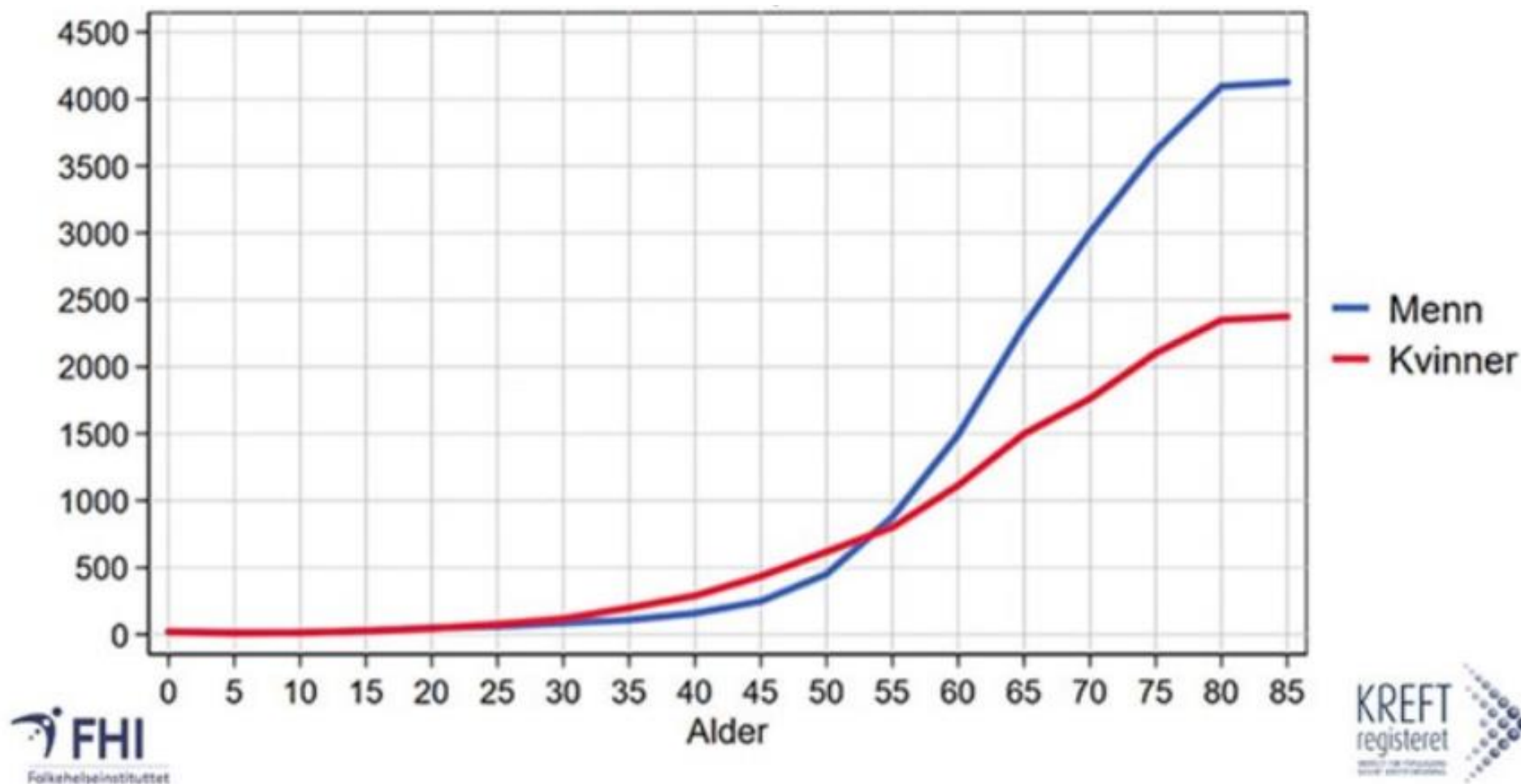
Is there a problem?  
 (One case reported on NCS last 25 years)

8. **Recommended adjustment of decompression for standard air decompression dives.** To simplify the assessment of the individual risk factors, the table below may be used.

Risk factor	Score	1	2	3
Work load		Low	Medium	High
Thermal comfort during decompression		Neutral/warm	Cold	
Individual factors Age > 50 BMI > 30 Sedentary		0-1 individual factors	2-3 individual factors	

By adding the scores for the various groups of risk factors you will achieve a total score ranging 3 to 7. The highest score will be achieved with a dive with a high work load, where the diver has been cold during decompression and has 2 or 3 of the individual risk factors. For score 5 we recommend that the decompression is adjusted according to a bottom time one step longer than the required. For scores 6 and 7 we recommend decompression according to a bottom time two steps longer than prescribed.

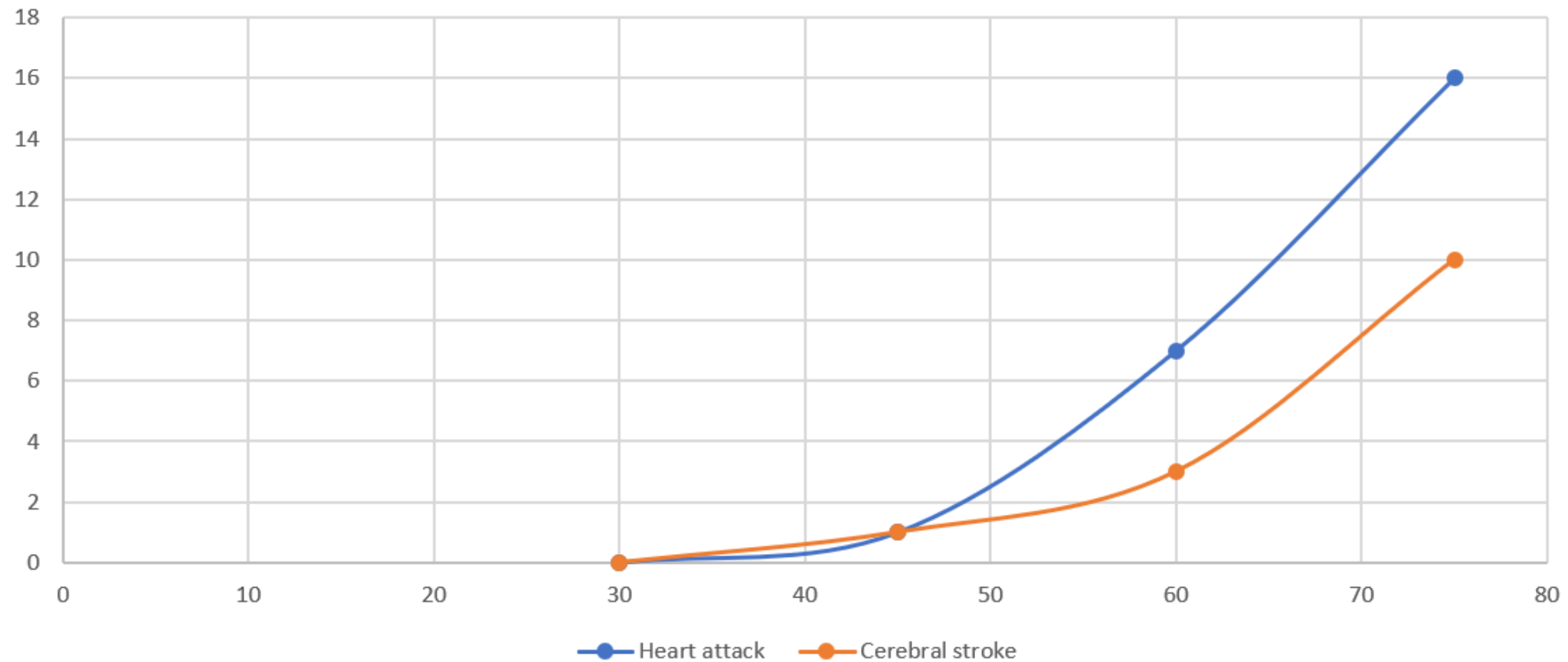
# New cases of cancer (incidence rate), Norway, pr 100,000





## Increase in cardiovascular and cerebrovascular disease with age

Prevalence of heart attack and stroke among Norwegian males [%]



# Peak oxygen uptake and cardiovascular risk factors in 4631 healthy women and men

Aspenes ST et al, Med Sci Sports Exerc. 2011

“ ... cardiovascular risk factors may remain fairly constant with increasing age among people who regularly engage in physical exercise.”

“ ... $VO_{2peak}$  was clearly associated with levels of conventional cardiovascular risk factors”

“Our data suggest that a  $VO_{2peak}$  of 44.2 mL/kg/min in men (...) may represent a threshold , below which an unfavourable cardiovascular risk profile is apparent”

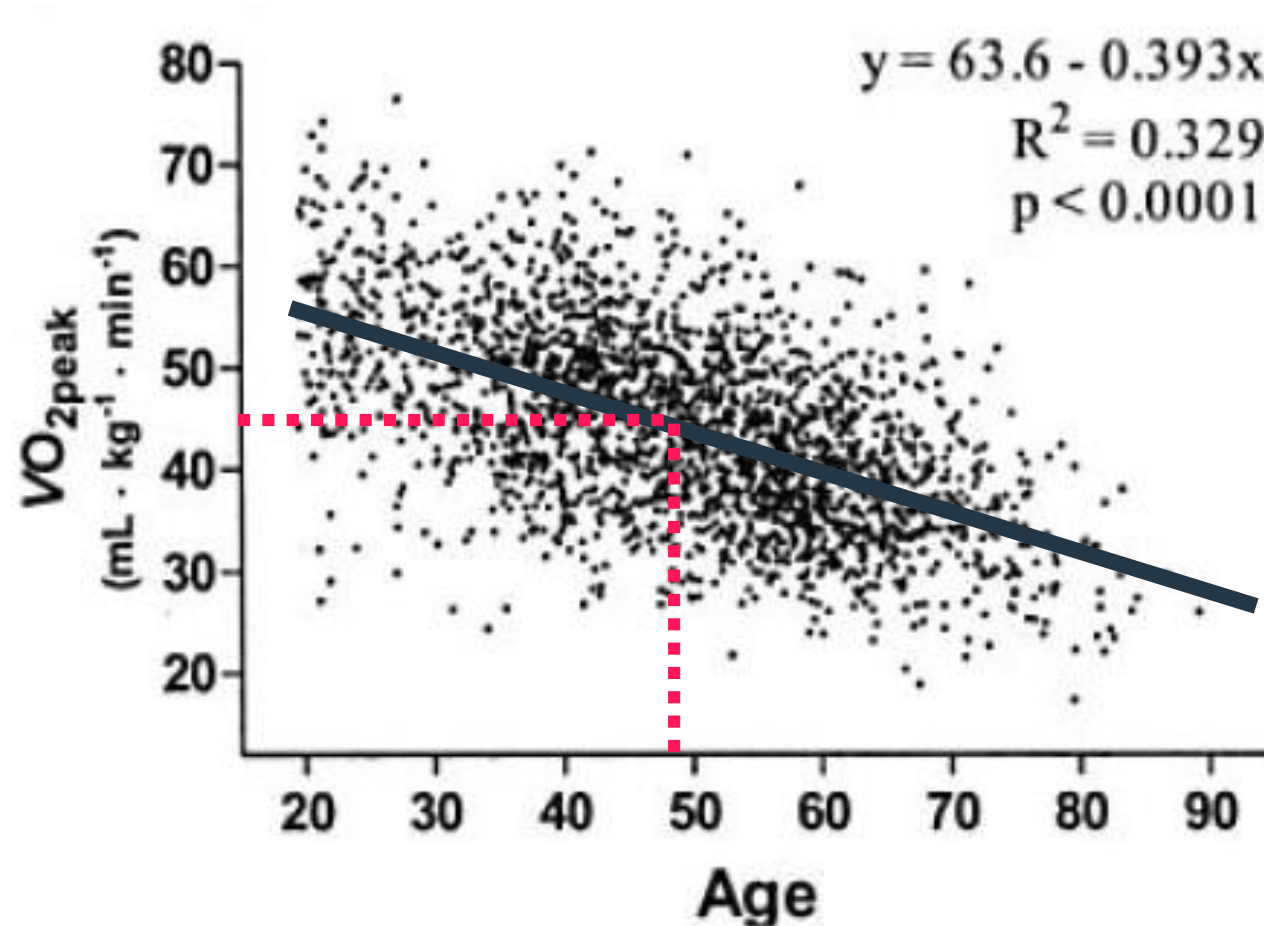
## $\text{VO}_{2\text{peak}}$

- is a strong predictor of cardiovascular disease (CVD) and all-cause mortality
- can be increased through physical exercise
- can be accurately measured
- Requirements for  $\text{VO}_{2\text{peak}}$  are already in regulations/guidelines

## Conclusion

- Requirement for  $\text{VO}_{2\text{peak}}$  is useful to reduce risk of acute cardiovascular disease in an aging diver population
- Requirement should be approximately 45 ml/kg/min
- Measurements of  $\text{VO}_{2\text{peak}}$  to assess cardiovascular risk should be done with direct method

# $\text{VO}_{2\text{peak}}$ measured in normal, healthy male population (n=2368)





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