

# RISK



This resource is based on *The Norm Chronicles: Stories and Numbers about Danger* by Michael Blastland and David Spiegelhalter. In this resource we calculate the risk to your life when undertaking Extreme Sports (Chapter 16).

Life is a risky business! Every day, we each carry out activities with varying levels of risk on our lives. We often assess the risk of activities in our heads and decide whether we are going to carry them out or not. But are these judgements realistic?

One way of assessing risk to your life is through the use of *MicroMorts (MM)*, which is a one-in-a-million chance of dying. This is roughly a 'one-in-a-million chance of something horribly and fatally dramatic happening to Mr or Ms Average on an average day spent doing their average, everyday stuff'. \*

EXAMPLE: Over 20 years, from 1992 to 2011, the British Parachute Association recorded 46 fatalities in 4,668,375 sky-diving jumps. Calculate this risk per jump in *MicroMorts*.

Firstly we find the risk of death using the data we have been given:

$$\frac{46}{4,668,375} = 0.00000985 \dots$$

Then we need to convert this to *MicroMorts*, by multiplying by a million:

$$\frac{46}{4,668,375} \times 1,000,000 = 9.85 \dots \approx 10MM$$

So for every sky-dive there is a risk of 10 *MicroMorts*. You should note that these are average risks faced. Of course in individual circumstances, people may be safer or more at risk.

## TASK A

Imagining that you are an average person, put these activities in order of which you think would have the most risk on your life, 1 being the most risky and 5 being the least risky.

Activity	Running a Marathon	Parachuting	Scuba Diving	Climbing the Himalayan Mountains	BASE Jumping
Rank					

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## TASK B

Next we need to calculate the MicroMorts for each of these activities. Put your results in the table below and re-rank the activities according to the risk.

1. From 1975 to 2004 there were a recorded 26 sudden death cardiac arrests from 3,292,268 marathon runners in the USA. Calculate this risk of a sudden death cardiac arrest from taking part in a marathon in MicroMorts.
2. The US Parachute Association recorded that for the years 2000 to 2010 inclusive, 279 people were killed in parachute accidents. During this time an average of 2.6 million jumps were made per year. Calculate the risk per jump in MicroMorts.  
HINT: The 279 deaths were over a period of 11 years!
3. In the 12 years, from 1998 to 2009, the British Sub-Aqua Club recorded 197 deaths. They estimate that an average of 2 million dives take place per year. Calculate the risk per dive in MicroMorts.
4. Between 1990 and 2006 of 20,000 people climbing above 8,000 metres in the Himalayas, an estimated 238 people died. How many MicroMorts per climb over 8,000 metres is this?
5. It was recorded that over 11 years, 9 people died from BASE jumping the Kjerag Massif in Norway (1,000 metre drop). There were an estimated 20,850 jumps in this time. How many MicroMorts is this per jump?

Activity	Running a Marathon (per marathon)	Parachuting (per jump)	Scuba Diving (per dive)	Climbing the Himalayan Mountains (per climb over 8,000m)	BASE Jumping
MicroMorts					
Rank					

Are you surprised by your results?

Why do you think the risk for running the marathon is similar to scuba-diving?

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## EXTENSION

To find out more about MicroMorts visit the following links:

Understanding Certainty: MicroMorts: <http://understandinguncertainty.org/MicroMorts>

Chance of sudden death (MicroMorts) - Number Hub (Ep 11) - Head Squeeze:  
<http://www.youtube.com/watch?v=htraBtY9Hew>

Follow Norm through his life and understand the risks he takes: <http://thenormchronicles.com/>

## REFERENCES:

\*Blastland, M. and Spiegelhalter, D. (2013) *The Norm Chronicles: Stories and Numbers about Danger*, London: Profile Books.

British Sub-Aqua Club. UK Diving Facilities Review. Available from:  
<http://www.bsac.com/page.asp?section=3780&sectionTitle=UK+Diving+Facilities+Review> [accessed 13 August 2013].

British Parachute Association. (2012) *How Safe*. Available from:  
<http://www.bpa.org.uk/staysafe/how-safe/> [accessed 13 August 2013].

Redelmeier, D.A. and Greenwald, J.A. (2007) Competing Risks of Morality with marathons: retrospective analysis. *BMJ*. 2007 Dec 22;335(7633):1275-7.

Soreide, K., Ellingsen, C.L. and Knutson, V. How Dangerous is BASE Jumping? An Analysis of Adverse Events in 20,850 Jumps From the Kjerag Massif, Norway. *The Journal of Trauma: Injury, Infection, and Critical care*. 2007 May;62(5):1113-7.

United States Parachute Association. *Skydiving Safety*. Available from:  
<http://www.uspa.org/AboutSkydiving/SkydivingSafety/tabid/256/Default.aspx>. [accessed 15 August 2013]

Windsor, J.S. et al. (2009) Mountain Mortality: A Review of Deaths that Occur during Recreational Activities in Mountains. *Postgraduate Medical Journal*. 2009 Jun 1;85(1004):316-21.