"Because It's There"

Full Time Adventurer, Part Time Anaesthesiologist

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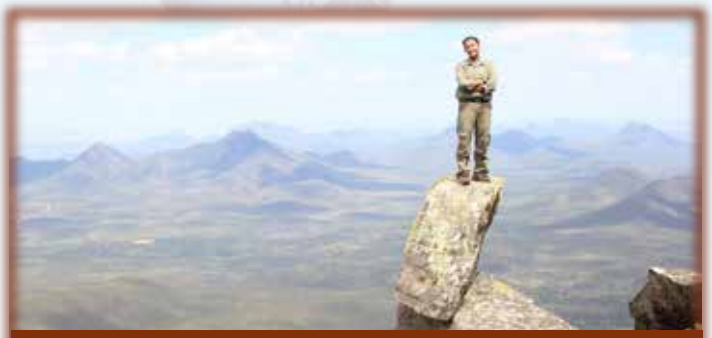
At 5200m altitude,

You are tachypnoiec. You are breathless.
Your mind cannot seem to think straight.
You are so tired. You feel sleepy.

And upon checking your saturation, SPO2 is 74%. You are very hypoxic.

And why again did you climb that high??



Mt Toolbrunup, Western Australia

"Because it's there" was the frank answer given by George Mallory; a legendary British Everest climber when asked after his first failed attempt. He tried again in 1924 and that attempt caused him his life but the mystery of it remains despite his body was later discovered in 1999.

Stok Kangri Base Camp, 4980m

If you ask me what makes me itchy every year to go for a summit be it alpine or not kind of expedition, I have to concur with Mr Mallory's answer. Everybody will have their own reasons. However, I believe it is the satisfaction of experiencing the journey rather than the destination. Of course, reaching the summit is the objective but as we go higher and higher, it is much more than grit and ability; it is more of knowledge, wisdom and perseverance. It can be a very dangerous hobby as evidenced by the recent death of a fellow Malaysian anaesthesiologist whilst trying to summit Mount Annapurna in May 2019.

Mt Siguniang base camp

SInce 2012, I will try to plan a major trip overseas yearly to mountains higher than 4500m. I really do not know how to explain why I am looking for the hypoxic feeling but it is part of the challenge. Climbing these mountains would require a lot of preparations, physically and mentally in the aim of reaching the top. I was introduced to the idea of reaching the 7 summits of the world. (7 summits in 7 continents)

2012 - Mount Koszisko, Australia 2228m - Highest in Australasia continent

2014 - Everest Base Camp, Nepal 5364m

2015 - Mount Kilimanjaro, Tanzania. 5895m Highest in African continent

2016 - Mount Stok Kangri, Leh India 6153m Highest in Stok Range Himalaya. Reached 6000m.

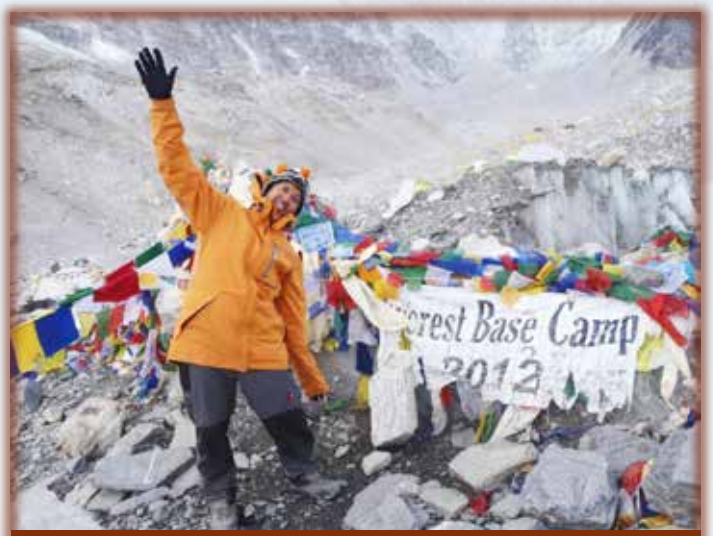
2017 - Mount Elbrus, Russia 5642m Highest in Europe continent

2018 - Mount Pulag, Philippines 2926m Highest in Luzon

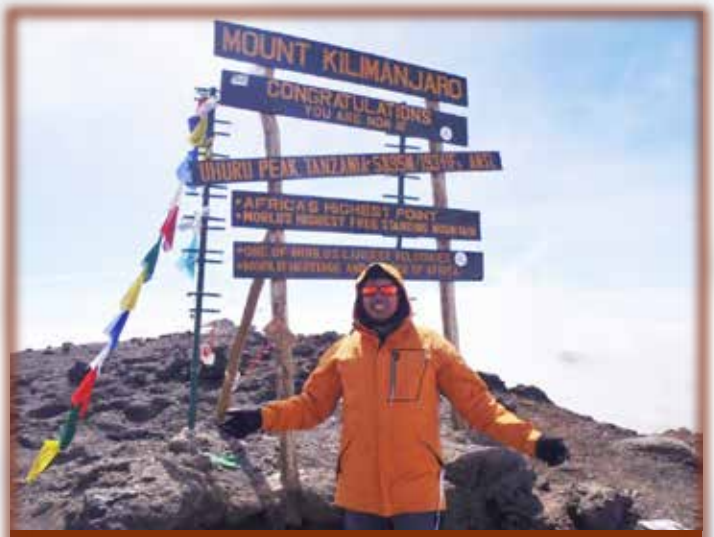
2019 - Mt Fansipan, Vietnam. 3143m Highest in Indochina

Mt Elbrus Summit with fellow anaesthesiologist Dr Zamri Jamingan

I have always been fascinated with mountains. It has always been my dream to be a climber since my school days. It was through my reading of various books at my early stage of life that drew me to this past time. I would read the lengthy expedition journals and novels and be amazed by the pictures seen in the library (old school, no internet then). Occasionally there would be national geographic television documentaries and at night I would dream of doing these climbs in my sleep.



Everest Base Camp. This is also not here anymore after the earthquake!



Mt Kilimanjaro summit

Joining scouts in secondary school brought me closer to nature. I have always enjoyed outdoors and school holidays would be something to look forward too for our camping and hiking activities. True enough I managed to do the first climb when I was in form four and that was to the highest peak in Peninsular Malaysia, Gunung Tahan! It was such a wonderful experience and a very painful expedition to learn from! We trekked via the Ulu Tembeling route which took us five days up and down! What made it painful was we did not really have an expert to guide us for the preparation. It did not deter us and all of us summited in 1992!

Interestingly, despite my so-called passion to climb, I did not join any another mountain expedition until 2006! I suppose I had too many ambitions to fulfill and being an anaesthesiologist was one of it. Ironically, it was during my Masters programme I rekindled this passion of mine. Foolishly then, with a comrade of mine Dr Shakti (currently anaesthesiologist in Australia) we took the leap of faith scaling up Mount Kinabalu! There was zilch training and it was just grit and stubbornness. Shakti suffered a chronic pain episode after that and I recovered my 1, 2, 3 step breathe to summit strategy.

Mt Kinabalu 2006. Its not there anymoreafter the earthquake!

I was lucky that I managed to meet like-minded people and joined their society, Orang Gunung Kuala Lumpur. There were many experienced ones and slowly I learnt the ways of outdoors and art of climbing. Malaysian mountains are of heights of less than 3000m and pose a challenge of dense rainforest extremes. I have yet to finish my G12 but I have done all my Big 5 by 2009. (There are two recent additions to the 12 mountains in Malaysia which I need to renew)

It was with this group that I met my two mentors - two awesome gentleman who later became the few who have summited Mount Everest in 2013. And it is with their encouragement and guidance that I have decided to hold that dream of summiting Everest one day. They are the ones who have introduced me to the next level of mountaineering; alpine climbing.

When one climbs higher than 3000 meters, there are significant physiological changes of the body. This is called acclimatization as the body needs to adjust with the decreasing oxygen levels in the atmosphere. The adjustment process itself will produce symptoms and causes illness perhaps better known as Acute Mountain SIckness (AMS). These symptoms are really resulting from hypoxia to the tissues. AMS is not to be taken lightly as it can cause serious fatalities.

The physiology of altitude sickness centres around the **alveolar gas equation**; the atmospheric pressure is low, but there is still 20.9% Oxygen. Water vapour still occupies the same pressure too - this means that there is less oxygen pressure available in the lungs and blood. Compare these two equations comparing the amount of oxygen in blood at altitude:

	At Sea Level	**At 8400m (rough height of Everest)**	Formula
Pressure of oxygen in the alveolus	21%.(101.3kPa - 6.3kPa) - (5.3kPa / 0.8kPa) = **13.3kPa O_2**	21%.(36.3kPa - 6.3kPa) - (1.8kPa / 0.74kPa) = **3.9kPa O_2**	$F_IO_2.(P_B-P_{H2O}) - (P_{CO2}/RQ)$
Oxygen Carriage in the blood	(0.98 * 1.34 * 14g/dL) + (0.023 x 12kPa) = **17.3ml O_2 / 100ml Blood**	(0.54 * 1.34 * 19.3g/dL) + (0.023 x 3.3kPa) = **14.0ml O_2 / 100ml Blood**	(Sa_{O2} * 1.34ml/g Hb * Hb) + (Oxygen carriage in blood * Pa_{O2})

The hypoxia leads to an increase in minute ventilation (hence both low CO2, and subsequently bicarbonate), Hb increases through haemoconcentration and erythrogenesis. Alkalosis shifts the haemoglobin dissociation constant to the left, 2,3-BPG increases to counter this. Cardiac output increases through an increase in heart rate.

The body's response to high altitude includes the following:

- ↑ Erythropoietin → ↑ hematocrit and haemoglobin
- ↑ 2,3-BPG (allows ↑ release of O2 and a right shift on the Hb-O2 disassociation curve)
- ↑ kidney excretion of bicarbonate (use of acetazolamide can augment for treatment)
- Chronic hypoxic pulmonary vasoconstriction (can cause right ventricular hypertrophy)

People with high-altitude sickness generally have reduced hyperventilator response, impaired gas exchange, fluid retention or increased sympathetic drive. This is thought to be an increase in cerebral venous volume because of an increase in cerebral blood flow and hypocapnic cerebral vasoconstriction causing oedema. Hypothermia is another challenge that the body has to take and that factors in on how fast one gets AMS if one is not readily equipped to battle the cold.

Over the years, I have had my fair share of AMS. I have had to initiate a rescue on a fellow group member who was severely hypoxic. I have had to make decisions for the group in limiting another member's further participation in the expedition. Both these stories were written in my short story in the Diagnosis2 novel, awarded the Best MPH Malay non-fiction book for 2015. I have myself became a near victim of Acute PUlmonary Oedema (not a nice feeling yeah!). And I have been very dehydrated before that I had frank haematuria! I am thankful with all that had happened I was still able to maintain my sanity and health.

Yes, it is my aim to peak Everest one day and I hope to be able to do it in the coming years. Watch it! As for now, 2020 - I will be embarking my adventure to reach near 7000m with my coming expedition to Mount Aconcagoa, Argentina. 6960m.

42nd birthday on Mt Siguniang