CPL Theory
Human Factors (CHUF)

CHUF 1 – Health & Fitness

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2. Amendment Record

Amendments made to this document since the previous version are listed below. All amendments to this document have been made in accordance with CAE OAA document management procedures.

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31 & 32	Fixed spelling error of Medicine	Samantha Maguire	20/09/2019

3. Disclaimer

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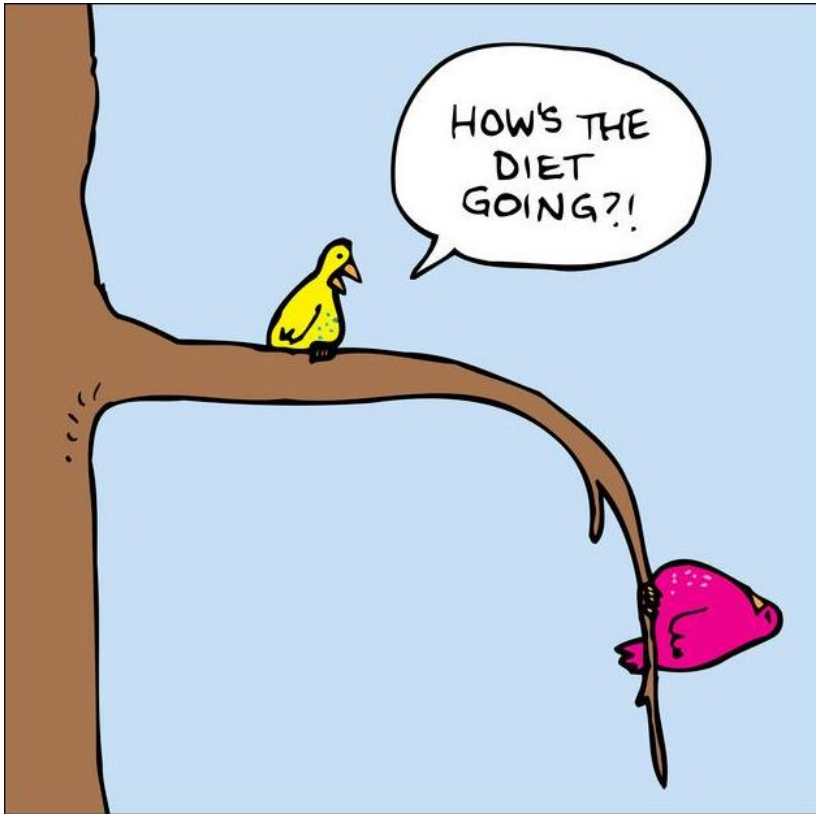
A BALANCED DIET

A Balanced Diet – "You are what you eat"

- Your body is a machine and requires sufficient quality fuel to make it function at peak efficiency

- Eating proper meals at correct times means that you are able to function as a pilot to the best of your ability



A Balanced Diet – "You are what you eat"

- Eating too little can lead to:

  1. Low Blood Sugar (hypoglycaemia)

  2. Fatigue in the cockpit

- Eating too much can lead to obesity, causing health problems such as:

  1. Hypertension (high blood pressure) → also caused by too much salt!

  2. Gout (a type of arthritis caused by excess uric acid in the blood)

  3. Diabetes (a hyperglycaemic condition)

  4. Heart Diseases and Problems such as:

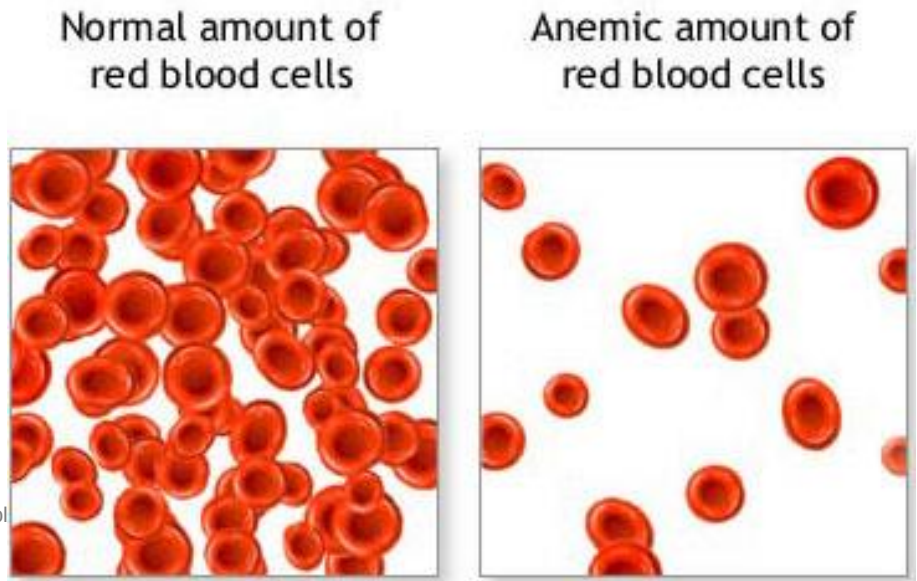
  - Angina (an obstruction in the coronary arteries)

  - Myocardial Infarction (heart attack)

A Balanced Diet – "You are what you eat"

- Note that health problems can also result from not eating the **right types** of food
- A good example of this is **anaemia**
- Anaemia is a blood disorder resulting from **not enough iron**
- This results in a decrease of **haemoglobin** in the blood, which is the component of red blood cells that carries oxygen around the body
- A large source of iron into the body comes from the food we eat, including:

1. **Red meat**
2. **Eggs**
3. **Green vegetables/legumes**



PHYSICAL FITNESS

Physical Fitness

- A poor diet almost always results in inappropriate bodyweight
- One method of determining our "ideal" bodyweight is the **Body Mass Index (BMI)**
- This compares our weight to our height using the formula:

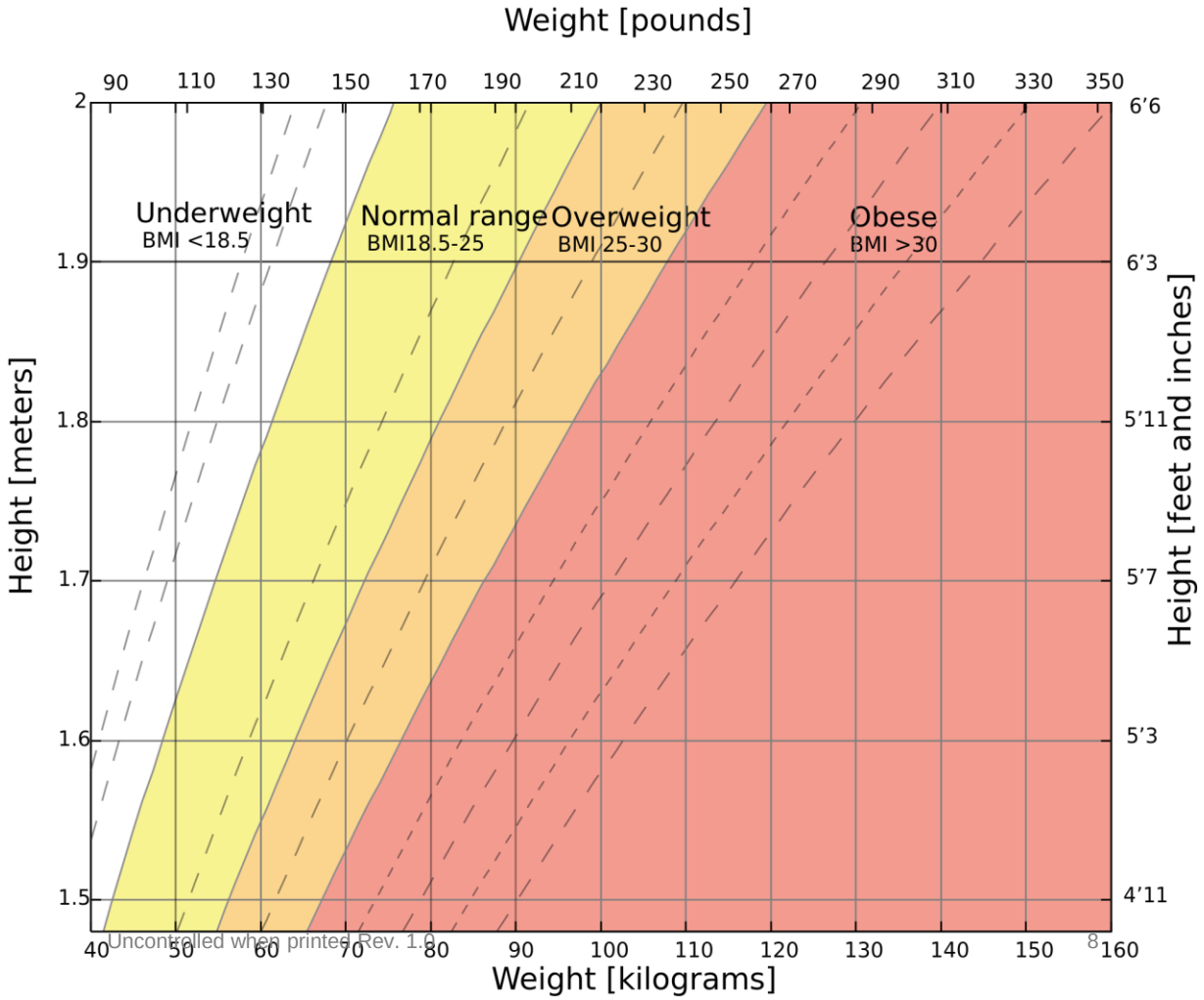
$$\text{BMI} = \frac{\text{Weight (kg)}}{\text{Height (m)}^2}$$

BMI < 18.5 = underweight

18.5 < BMI < 25 = normal

BMI > 25 = overweight

BMI > 30 = obese



Physical Fitness

- Another method of determining our fitness state is the **“pinch” test**

- **If you pinch yourself just above the hip, the fold of skin in your fingers should be no more than 12mm thick**

Physical Fitness

- The National Heart Foundation recommends the following to maintain a normal bodyweight and fitness:

1. Reduce your fat, salt and sugar intake

2. Increase your fruit intake and variety of foods

3. Eat proper meals at regular intervals

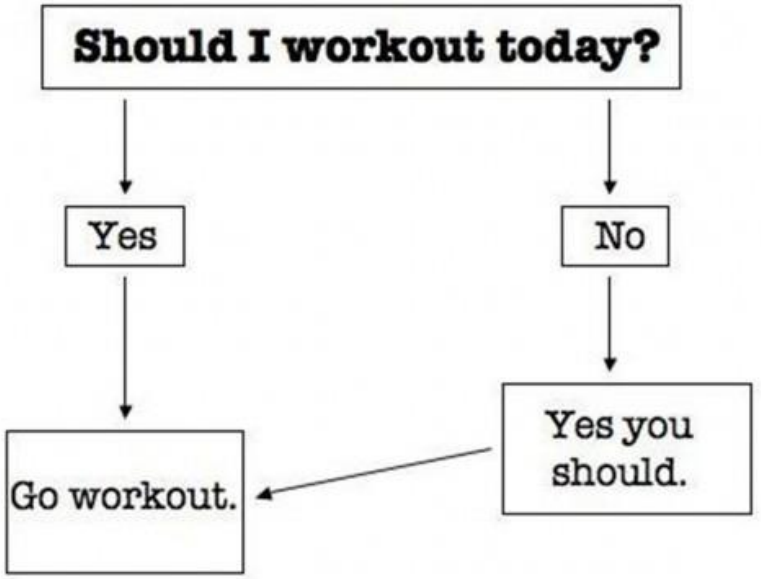
4. Exercise more regularly

- To be effective, exercise must be:

1. Regular (minimum 3 times a week)

2. 30 minutes in duration

3. Sufficient intensity to double your heart rate from the normal level



FOOD POISONING

Food Poisoning

Food Poisoning

- The most common cause of sudden pilot incapacitation is **food poisoning**!
- The second most common cause is **heart attack**
- Some tips for pilots often eating on the go are:

1. Avoid pre-prepared hot foods e.g. pies, pasties etc.

2. Avoid oysters, shellfish and cold meats

3. Avoid dishes with cream or creamy sauce

4. Always eat a different meal to your co-pilot

DEHYDRATION

Dehydration

- In hot conditions, our bodies can lose up to **5 litres of water a day**
- **Heat stress** is likely to occur at temperatures in excess of **32° C**
- To make matters worse, **at altitude**, the air is drier and **perspiration increases** although it is not noticeable because of instant evaporation
- The cure is simple: **drink more water!**

- For pilots in hot conditions, pilots should drink more water than dictated by thirst alone **(250mL of water every hour** is a good rule)

BLOOD DONATIONS

Blood Donations

- While the effect of donating blood varies from one individual to another, it can cause a feeling of **tiredness** and a somewhat **reduced blood pressure**

- It is recommended to spend **24 hours on the ground** after giving blood and more if there is any unusual reaction

- If in doubt, it is best to contact your doctor/DAME

SMOKING

Smoking

- While exercise and a sensible diet are important determinants of health, they are largely nullified if you smoke

- Smoking:
    1. **Doubles the risk of heart attack**
    2. **Doubles it again if you have high blood pressure/cholesterol**
    3. **Doubles the risk of stroke**
    4. **Costs an average of about 10 hours' flying per year**

- For pilots, it is also important to know that the carbon monoxide in tobacco smoke affects one's performance in the areas of **visual sensitivity** and **alertness**

- **A smoker will have reduced night vision even at sea level**

- This is made even worse when oxygen levels are reduced at altitude and worse again if you are tired

ALCOHOL

Alcohol

"Ladieshh and gentlemen, thish ish your captain shpeaking, hic!"

Alcohol

- Alcohol is classed as a **depressant**
- This means it reduces our functional or nervous activity
- For this reason, the law requires that pilots:

  1. Not be intoxicated

  2. Have a BAC < 0.02

  3.Not have consumed alcohol 8 hours before the departure of a flight

- During this time, alcohol leaves the body by:

  1. Urinating

  2. Breathing

  10% of alcohol removal

  3. Metabolic Processes (liver)

  90% of alcohol removal

Alcohol

- Whilst fatty foods and water may moderate the effects of alcohol, the time it takes to process alcohol **cannot be shortened**

- The effects of alcohol can be measured in the brain well after the BAC has fallen. Therefore, whilst your BAC might be within tolerances, **your brain and overall performance could still be affected**

- Below are some useful facts:

1. Reduction in **information processing** lasts up to **14 hours after drinking**

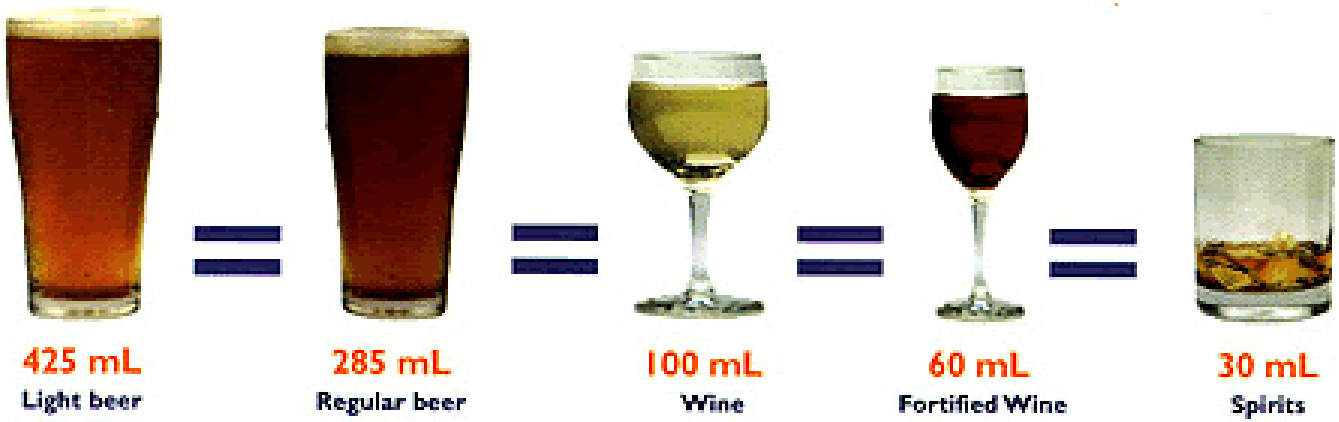
2. **Physical and mental competence** is affected for up to **24 hours after all**

3. As well as affecting your brain, alcohol also affects the balancing mechanism of the ear, making **disorientation in flight more likely**

Alcohol

- The body processes alcohol at the rate of **one standard drink per hour** for men

- A standard drink contains 10 grams of alcohol



- The maximum recommended alcohol intake for 1 week is:

  1. 28 for males

  2. 21 for females

- For pilots to be completely free from any effects of alcohol, you should not consume more than 2 drinks within 24 hours of flying

ILLICIT DRUGS

Illicit Drugs

- The effects of any illicit drugs are roughly comparable with those of alcohol
- They all have serious effects on mood, mental performance and health
- These effects can even make the subject think his/her performance is improving when in fact it is getting worse!

PRESCRIPTION DRUGS & COMMON MEDECINES

Prescription Drugs & Common Medicines

- **NO DRUG should be taken before flying without the approval of a DAME**

- An ordinary doctor might not realise the implications of flying under the influence of a drug he/she is prescribing. Side effects particularly hazardous to pilots could include:

    1. Disrupting the organs of balance (leading to **disorientation**)

    2. **Drowsiness** (many common cold & flu drugs contain **antihistamines**)

- If you need to take any drug, the condition for which you are taking it could well affect your ability to cope with task of piloting, particularly if something goes wrong

Why would you start a flight with a disability?

Prescription Drugs & Common Medicines

Below are some common medicines to watch out for:

- Analgesics (painkillers) **(can cause positive result for opiates in CASA DAMP test)**
- Laxatives
- Common Cold Remedies
- Vitamins & Mineral supplements
- Indigestion Remedies
- Stimulants
- Antibiotics
- Tranquillisers/Sedatives **(sleeping tablets – allow 24 hours after ingestion before flight)**
- Blood Pressure Regulators (although some are now CASA approved)

Prescription Drugs & Common Medicines

- Basically, as pilots, we must:

1. Try to maintain our health without resorting to drugs

2. Not fly when in doubt of our health

3. No "She'll be right!" attitude!

4. Consult a DAME for questions and queries

I'M SAFE Checklist
Illness - Symptoms
Medication - Prescription or OTC
Stress - Job, Financial, Health, Family
Alcohol - 8 Hrs? 24 Hrs?
Fatigue - Adequately rested
Eating - Adequately Nourished

MEDICAL EXAMS

Medical Exams

- Our medicals are how CASA check that we are maintaining the standard required to hold a licence
- If we do not pass our medical, we may be unable to keep flying
- Although every effort is made to keep a pilot flying, it is in our best interests to make sure it doesn't come to that through healthy eating and exercise

"Oh No! I forgot my driving glasses! What! You too? Now what are we going to do?"

Medical Exams

CASR 67.265

- If you are impaired for a certain period, you must not fly until a DAME certifies that the impairment no longer exists

- This period is:

1. 30 days for PPL (Class 2 or 3 Medical Holders)

2. 7 days for CPL (Class 1 Medical Holders)

AGE

Age

- Some aspects of pilot performance deteriorate to an extent as pilots grow older, including:

Hearing:

- Deterioration begins in the **mid-twenties** age range
- **Higher frequencies begin to deteriorate first**
- Hearing loss is faster in men than in women

Sight:

- Deterioration begins in the **forties**

Memory:

- Some problems appear in **middle aged people**

Age

- However, these problems vary tremendously between individuals
- Furthermore, most of these disabilities are offset very largely by increased knowledge and experience

PREGNANCY

Pregnancy

- Flying will have no adverse effect on a normal pregnancy, but it would be wise to consult with your DAME

- The recommendation is that flying should cease after the 6th month for reasons such as:

1. **Difficulty with refuelling and pre-flight inspections**

2. **Increased ankle swelling during long flights**

3. **Possibility of restricted control operation in normal or emergency**