



P09

Out Of The Norm

E365 – Aviation Human Factors

SCHOOL OF
ENGINEERING



- A job schedule in which employees work hours other than the standard hours or a schedule other than the standard workweek
 - Required for industries where operations are conducted outside the standard hours, especially those that operate 24/7
- A shift is defined as a single continuous work period
- Type of shifts
 - Morning, afternoon, night
- Shift systems
 - Fixed
 - Rotating or rotational
 - Changes from shift to shift or cycle to cycle

Advantages of shiftwork



- More days off
 - More time with family if they are available at the same time
- Avoid peak traffic times when travelling to work
 - Reduced travelling time to work
- Opportunities for second/part-time jobs
- Higher pays

Disadvantages of shiftwork



- Work-life schedule is out of the norm
 - Difficult to spend time with family and friends who work standard hours
 - May result in low morale, depression, divorce, alcohol and drug abuse, etc.
- Working when human performance is poorer
 - May cause more errors at work, traffic accidents while commuting to and from work
- Desynchronization of the body's rhythms
 - Poor sleep quality, sleep deprivation, chronic fatigue syndrome
 - May result in gastrointestinal and cardiovascular disorders

Effects on circadian rhythms



- Working at night is the most common cause of wake-sleep cycle disruption .
 - When trying to sleep during the day after a night shift, sleep quality is often poor.
- It is possible for a person to become acclimatized to working at night, if he can establish a new wake-sleep cycle. However, this is difficult.
 - For instance, when a person drives home after a night shift the bright morning sunlight resets the internal clock and they start to feel more alert and not ready for sleep.
 - Trying to sleep in daylight is more difficult as the light is sensed even through closed eyes. This is the reason why cabin crew dim the lights of an aircraft and issue blindfolds when they wish the passengers to go to sleep.

Effects of Drugs



- Depressants are psychoactive drugs that slow down mental and physical activity.
- Stimulants are psychoactive drugs that increase the central nervous system's activity.
- Prolonged usage of drugs causes
 - Tolerance
 - Physical dependence
 - Psychological dependence
- Medication may have side effects
 - The duration of the effect is variable from person to person and may be unduly prolonged.
 - Individuals should have expert medical advice before using them, especially if they are operating heavy machineries.

Effects of Alcohol

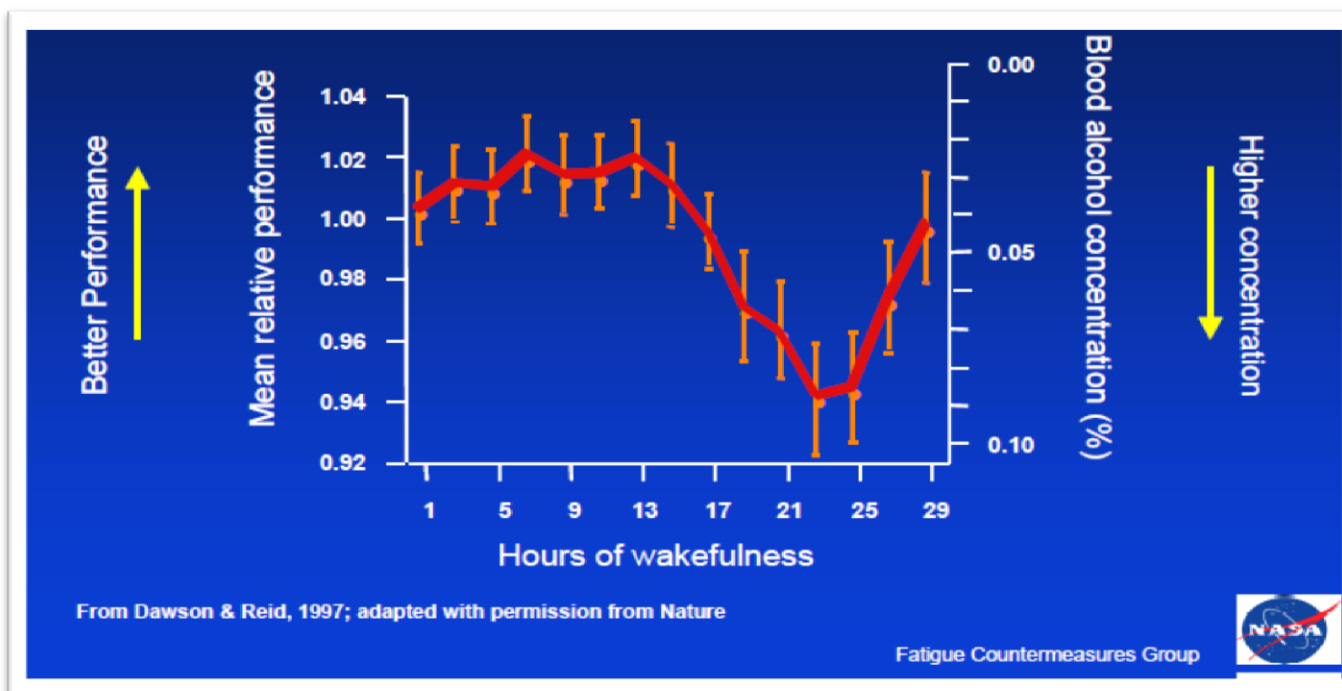


- Alcohol adversely affects performance:
 - Impairs discrimination
 - Impairs visual and auditory perception
 - Disrupts short-term and long-term memory
 - Impairs thinking and decision making
 - Impairs coordinated hand-eye movements
 - Slows reaction time
 - Lowers inhibitions and increases recklessness
 - Risk taking increases
 - Errors in judgment can pass unnoticed

Effects of Alcohol



- A person with 0.09% blood alcohol concentration level will have a similar work performance (0.94) to a person who has not slept for 22hours.
- This also illustrates that the chances of making errors are highly possible by a person who has a higher blood alcohol concentration.



Factors affecting BAC



- The amount of alcohol a person consumes
- The speed at which a person consumes alcohol
- Gender
- Weight
- Fat/muscle content
- Metabolic rate
- Medication and the amount of food in the stomach

Effects of Caffeine



- Caffeine is the world's most widely used psychoactive drug. It is a stimulant.
 - Found in coffee, tea, cola drinks, chocolate, energy drinks such as Red Bull.
- People often perceive the stimulating effects of caffeine as beneficial for boosting energy and alertness
 - Some experience unpleasant side effects.
- Caffeinism refers to an overindulgence in caffeine
 - five or more cups of coffee (at least 500 milligrams) each day
 - mood changes, anxiety, and sleep disruption, insomnia, irritability, headaches, ringing ears, dry mouth, increased blood pressure, and digestive problems

Improve alertness during night shift



- Have adequate quality sleep with a combination of proper diet, and exercise
- Satisfy basic physiological and psychological needs
- Block out noise when sleeping in the day
 - Turn off the phone.
 - Disconnect the doorbell.
 - Talk to your family about your need to get the right amount of sleep and ask for help keeping noises down.
 - Wear earplugs.

Improve alertness during night shift



- Block out light when sleeping in the day
 - Light triggers our brain to think it is daytime making sleep more difficult.
 - Use black out curtains.
- Caffeine
 - Coffee, tea and some soft drinks contain caffeine and are widely used in our society.
 - When taken in moderation, it may help us to be alert.
- Nap
 - Taking short naps during break time helps to improve level of alertness and reduce fatigue.

Learning Objectives



- What is shift work
- Advantage/Disadvantage of Shift Work
- Problems with rotating shift work Shift patterns
- Shift Schedules
- Effects of sleep on Night Shift Workers
- Effect of Night Shift on the Circadian Cycle
- Effects of Drugs, Alcohol and Caffeine
- Effects of Alcohol on Work Performance
- Ways to Improve alertness during night shift