

The logo for '3rd Pillar of Health' features three vertical bars of varying heights and colors (two purple, one teal) to the left of the text. The text '3rd' is in teal, 'Pillar of' is in purple, and 'Health' is in purple.

# 3rd Pillar of Health

**Presentation to AOSH**

**Thursday 21<sup>st</sup> March 2013**

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# ***Framing the conversation***

# Sleep is the third pillar of health

- Sleep together with cardio vascular fitness and nutrition form the three pillars of good health
- Sufficient good quality sleep is also vital to keeping us healthy and productive



- With sufficient sleep we are more energetic, healthier, more successful and happier with our lives
- Sleep plays a major role in preparing the body and mind for an alert, productive, psychologically and physiologically healthy tomorrow.

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***“Managing your **energy** is more important than managing your time.”***

- A. G. Lafley, CEO Procter & Gamble

# The incidence of fatigue

- Between 1999 and 2010 those sleeping 7+ hours a night fell from 66% to 52%
- In the same period those sleeping less < 7 hours rose from 34% to 46% [1]
- Only 19% of us sleep for 8 hours a night [2]
- Half of us are woken 6 times a night by our partners [3]
- 75% of 30-something women frequently achieve less than 6 hours sleep a night
- 85% of 30-something women regularly feel tired
- Of those 59% feel tired all the time [4]
- As many as 1 in 3 GP's (doctor's) patients complain of feeling tired all the time (TATT). [5]

[1] National Sleep Foundation

[2] GMTV Poll in 2006

[3] The Sleep Council

[4] Actimel & Top Sante Study of 2000 women

[5] GP Keith Hopcroft

# Alertness: Good sleep habit

Alert

Neither

Sleepy

Very Sleepy



Adapted from: Horne, J., Sleepfaring, Oxford University Press, 2006, pg. 102, Figure 4.

# Alertness: Poor sleep habit

Alert

Neither

Sleepy

Very Sleepy

0 2 4 6 8 10 12 14 16 18 20 22 24

Time of Day

Adapted from: Home, J. *Sleepfaring*, Oxford University Press, 2006, pg. 104, Figure 5.

# Impact of fatigue on health

- Sleeping less than 6 hours a night increases the risk of obesity by 23% versus 7 to 8 hour sleepers
  - This rises to 50% in 5 hour sleepers and 73% in 4 hour sleepers [\[1\]](#)
- Sleeping for less than 5 hours a night increases the risk of diabetes by 2.5x [\[2\]](#)
- Reducing sleep from 7 to 5 hours a night doubles the risk of dying of heart disease. [\[3\]](#)

[\[1\]](#) US National Health & Examination Survey

[\[2\]](#) Boston University School of Medicine

[\[3\]](#) UCL & Warwick Universities



# Impact of fatigue on performance & safety

- Sleeping 4 to 5 hours a night for a week impairs performance to the same extent as being legally drunk [\[1\]](#)
- 6 hour sleepers are 11x more likely to make mistakes after 14 days of sleep restriction. This rises to 14x for 4 hour sleepers [\[2\]](#)
- Sleepiness accounts for 10% of accidents on UK roads, (20% on motorways and other monotonous roads). [\[3\]](#)

[\[1\]](#) Harvard Business Review

[\[2\]](#) Pennsylvania University

[\[3\]](#) Department of Transport & [www.sign.ac.uk](http://www.sign.ac.uk)

# Scientific studies – Shift work

- 21% of aviation incidents are blamed on fatigue
- 75% of surveyed shift workers reported sleepiness on the job, and 20% indicated they had fallen asleep
- A brief nap can improve alertness by 100% and performance by 34% [\[1\]](#)
- 40% of fatal crashes involving commercial truck drivers are attributable to fatigue [\[2\]](#)
- 20% of shift workers reported frequently or occasionally making errors due to sleepiness and 29% indicated that sleepiness interferes with daily activities a few days a week
- 68% of the shift workers reported that they experienced a sleep problem a few nights per week or more during the past year. [\[3\]](#)

[\[1\]](#) NASA

[\[2\]](#) US National Transportation Safety Board

[\[3\]](#) The National Sleep Foundation

# Effects of sleep deprivation

What happens if you don't get enough sleep?

- Daytime drowsiness – Temporary loss of energy and alertness particularly in the afternoon dip and in mundane tasks
- Microsleeps and 'Sleep seizures' – Temporary bouts of uncontrolled sleep
- Mood shifts – From increased irritability and loss of sense of humour to depression
- Stress – Including anxiety and loss of coping skills even with simple problems and inability to maintain perspective
- Lack of interest in socialising – Wanting to avoid group participation
- Weight gain – Comes from hormone imbalance and consumption of high sugar and carbohydrate food stuffs
- Cold flushes – Temporary feelings of being cold especially at night as the Circadian Rhythm ebbs
- Reduced immunity – The body's natural immune system stops functioning as sleep deprivation increases
- Feeling of Lethargy – Loss of motivation to maintain task and undertake new endeavours.

# Statistics – Driving and work

- 10% of people who own a vehicle for work admitted falling asleep at the wheel in last 12m [1]
- 25% of road deaths involve someone driving for work [2]
- Increased risk of a sleep-related crash for those:
  - Taking drowsy medicine 6.22x
  - Working night shifts 5.55x
  - Sleeping less than 5 hours 4.60x
  - Sleeping 5 to 5.9 hours 3.50x
  - Working irregular patterns 2.24x
  - Sleeping 6 to 6.9 hours 1.95x
  - Working 60+ hours a week 1.50x
- Business drivers with high work-related mileage (20,000 miles p.a.) have 50% more injury crashes. [3]

[1] Brake & Green Flag, 2008

[2] Department of Transport, 2008

[3] The National Sleep Foundation

# Tired driving – public views and our research

- 78% of people think it is unacceptable and 66% totally unacceptable to drive when tired
- However 40% of car, van and lorry drivers said they have carried on driving when too tired
- Only 9% of respondents put tired driving in their top 3 most important road safety issues
- Stopping for a nap came 14th of 23 strategies for countering tiredness [1]
- The incidence of drowsy driving amongst the general population is highlighted below. [2]

Frequency of drowsy driving	Never	Less than Once / Month	1-2 times / Month	1 or 2 times / week	3+ times / Week
% of sample who drive	27.5%	42.5%	16.3%	10.6%	3.1%
% of total sample	21.1%	32.5%	12.4%	8.1%	2.4%

[1] Think Road Safety Survey, 2009

[2] Source: Third Pillar of Health Survey at the 2010 Vitality Show – 209 respondents

# When fatigue and safety collide

- Tiredness and fatigue compromises individual and site safety
- Here are some extreme examples of major incidents caused by fatigue:
  - Exxon Valdez & Shen Neng tanker disasters – caused by fatigued personnel at the controls of ships
  - Herald of Free Enterprise ferry disaster – caused by personnel asleep at critical stage of the journey
  - Selby Rail Crash (UK) – sleep deprived individual veers off road onto railway line resulting in train crash
  - Chernobyl, Three Mile Island, Bhopal, Challenger space shuttle – Fatigue a contributory factor.



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# *How to spot signs of a sleep debt*

# Introduction

- In experiments on rats those deprived of sleep died sooner than those deprived of food (though not water)
- Sleep deprivation is commonly used in interrogations
- 17 hours of wakefulness impairs performance to the same extent as a blood alcohol level of 0.05%
- We take riskier decisions when we are tired
- In the 4 days after the shift to daylight saving accidental deaths increase by 7% compared to the weeks either side
- If you feel alert all day, even during the afternoon and early morning slumps you are probably getting enough sleep.



# Fatigue danger zone



# How does a sleep debt accumulate

- Think of sleep as a bank account. You can make deposits and over the course of the day you make withdrawals
- Sustained sleep deprivation creates a sleep debt
- We cannot make up for periods of poor nutrition with a one-day crash diet. Sleep debts are much the same.
- It can take up to 8 weeks to repay a serious sleep debt.

# How to spot signs of fatigue in yourself

- Reduced reaction times
- Difficulty concentrating & reduced attention span
- Reduced memory
- Difficulty coping with tasks
- Reduced ability to think logically and impaired perception
- difficulty assimilating new information
- Impaired decision making ability
- Difficulty thinking critically and creatively
- Reduced motor skills and co-ordination
- Blurred vision, headaches, nausea & reduced libido
- Fall asleep immediately when get to bed.

# Sleep latency

- Without sufficient good quality sleep we build up a **sleep debt** and our '**sleep latency**' tends to increase.
- This means that we are more likely to fall asleep in certain situations – which can be a good indication that you are carrying a **sleep debt**.
- We may feel **particularly sleepy** after a heavy lunch, a low dose of alcohol, when sitting in a warm room, a boring meeting, watching television or potentially more alarmingly while driving.



- These situations in themselves do not cause sleepiness, they simply unmask the **symptoms** of insufficient sleep.

# How to spot signs of fatigue in others

- Reduced vocabulary and impaired communication skills
- Slurred speech
- Increased irritability and more likely to become angry
- Daytime drowsiness (perhaps microsleeps), nodding
- Loss of interest in socialising
- Mood shifts & loss of sense of humour
- Weight gain
- Cold flushes – especially at night
- Uncontrollable yawning episodes
- Dark circles under the eyes.

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# *Why use Third Pillar of Health and why now?*

# What are we addressing

**Tiredness and fatigue is unproductive, costly, unhealthy and unsafe.**

A recent multi-employer study conducted by the American College of Occupational Medicine and the Integrated Benefits Institute studied 15,000 employees' health-related productivity costs. They found that the top 4 productivity costs affecting organizations were:

1. Fatigue
2. Depression *(strong link between sleep and mental health)*
3. Musculoskeletal conditions
4. Sleeping problems

Taking into account medical costs, pharmacy costs, presenteeism and absenteeism the greatest costs to organizations were identified as musculoskeletal conditions, depression and fatigue. Sleeping problems was the 5<sup>th</sup> greatest cost.

The main causes of fatigue are: individual issues, work schedules and the work environment. The greatest issue of these is individual issues which stem largely from poor general knowledge on sleep across the population.

Through our individual fatigue assessment and training programme we will give individuals the knowledge they need to make informed decisions that help improve energy, alertness, productivity, safety and health.

# Benefits of using Third Pillar of Health services

- Eradicate a key individual and organisational safety risk
- Improve fatigue levels leading to more energy during the day
- Reducing fatigue improves work-life balance as staff make a better contribution to all aspects of life
- Improved work-life balance leads to greater employee engagement
- Increased staff engagement and energy leads to higher productivity
- Reduced fatigue leads to fewer staff costs – absenteeism, presenteeism and staff turnover
- Lower staff costs and higher productivity lead to increased efficiency.



# Our programme

- Online fatigue assessment – developed with leading sleep research scientists
  - Individual 10-page report showing where improvements can be made to improve sleep and personal energy
  - Composite report detailing the results across the whole staff population
  - Ability to compare different sites and different shift systems
- Online training programme – Highly engaging and developed with leading sleep research scientists
  - Core offering looking at night time sleep in detail as well as barriers and contributors to good quality sleep
  - Individuals gain the knowledge they need to make informed decisions that help beat fatigue
  - Ability to add modules on: coping with shift work, drowsy driving, napping strategies (many more)
- Specific content delivered as factsheets, podcasts, webinars
  - Topics include the impact of caffeine, alcohol, exercise and eating for sleep (many more)
- Weekly email communication
  - The latest fatigue news, tips on better sleep, links to specific content, updates from the company.

# Why act now

<b>Area of Business</b>	<b>Well-rested staff</b>	<b>Fatigued staff</b>
<b>Safety</b>	Make fewer errors	Are a greater safety risk
<b>Productivity</b>	Are more productive	Are less productive
<b>Absenteeism</b>	Are less likely to be absent	Are more susceptible to ill health
<b>Presenteeism</b>	Achieve more during the day	Achieve less during the day
<b>Work-life balance</b>	Lead a more balanced life	Struggle with conflicting responsibilities
<b>Staff engagement</b>	Are more engaged at work	Are less engaged at work
<b>Communication</b>	Communicate better	Suffer from poor communication
<b>Efficiency</b>	Contribute more	Cost more
<b>Legislation</b>	Fatigue falls under the Duty of Care legislation. Employers are required to eliminate or at least reduce the risk of fatigue.	

# Appendices

1. About Third Pillar of Health
2. Third Pillar of Health Fatigue Assessment
3. Third Pillar of Health Fatigue Training
4. Third Pillar of Health sample client list
5. Third Pillar of Health contact details

# About Third Pillar of Health

- Third Pillar of Health is a leading provider of fatigue management solutions
- Founded in 2011 – spun out of an existing fatigue management business with 5 years successful operations
- Able to work across the world
- Working relationships with top sleep scientists in the US and UK
- Collaborative offering bringing in partners who lead their field where they make a positive contribution to a project
- A range of services encompassing:
  - Fatigue assessment
  - Fatigue training
  - Interactive workshops
  - Review policies and procedures

# Third Pillar of Health – Fatigue assessment

- Developed with a leading sleep research scientist and based on validated questions
- Used to assess levels of fatigue on an individual and organisation-wide basis
- We look at:
  - Sleep duration
  - Sleep quality
  - Chronotypes
  - The extent, impact and causes of fatigue
  - The risk of three major sleep disorders (OSA, Chronic Primary Insomnia, Restless Leg Syndrome)
- Each individual receives a confidential colour-coded report that helps them identify areas they can improve to help reduce fatigue and improve energy
- The organisation receives a composite report. It looks at health statistics, chronotypes, the propensity for fatigue, sleep duration, sleep quality and reasons for insufficient good quality sleep
- From the data we can suggest interventions to help improve fatigue levels.

# Third Pillar of Health – Fatigue training

- Developed with a leading sleep research scientists
- Aims to educate staff on sleep quantity and quality as well as hints and tips that can be adopted to improve duration and quality of sleep
- Conducted online or through face-to-face sessions. Interactive workshops available as well.
- Individuals learn key points to help them manage their energy and beat fatigue during the day.
- The training will help your staff improve their energy levels by teaching valuable tips and techniques on:
  - The architecture of sleep
  - The link between sleep and overall health
  - Sleep hygiene
  - Our natural circadian rhythm
  - Coping strategies to help deal with sleep deprivation.

# Some customers we have worked with previously

- “K” Line LNG
- Procter & Gamble
- Virgin Active
- Lawn Tennis Association
- Major multi-national drinks company
- Maintenance Management Limited
- Sanofi-Aventis
- Staffordshire University
- Urban Retreat
- Major Multi-national Chemical Company
- Billingham Machine Company
- The Richmond Group
- The University of Warwick
- Virgin Atlantic Airways
- Virgin Media
- ZBI Europe Limited
- ZBI Asia
- National Workforce Projects – Skills for Health
- NYSE Euronext LIFFE
- The Body Shop
- Playgate Limited
- Marble Bar asset Management
- GMAC RFC
- Rubicon Fund Management
- The Red Consultancy (Nytol)
- Mad Media (Windows Live)
- 2 independent personal trainers

**“Maximising staff energy levels throughout the day has lead to longer periods of concentration and focus at previously lull points in the day.”**

Neil Harrison, Operations Manager, Maintenance Management Limited

# Contact details

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