Sleep

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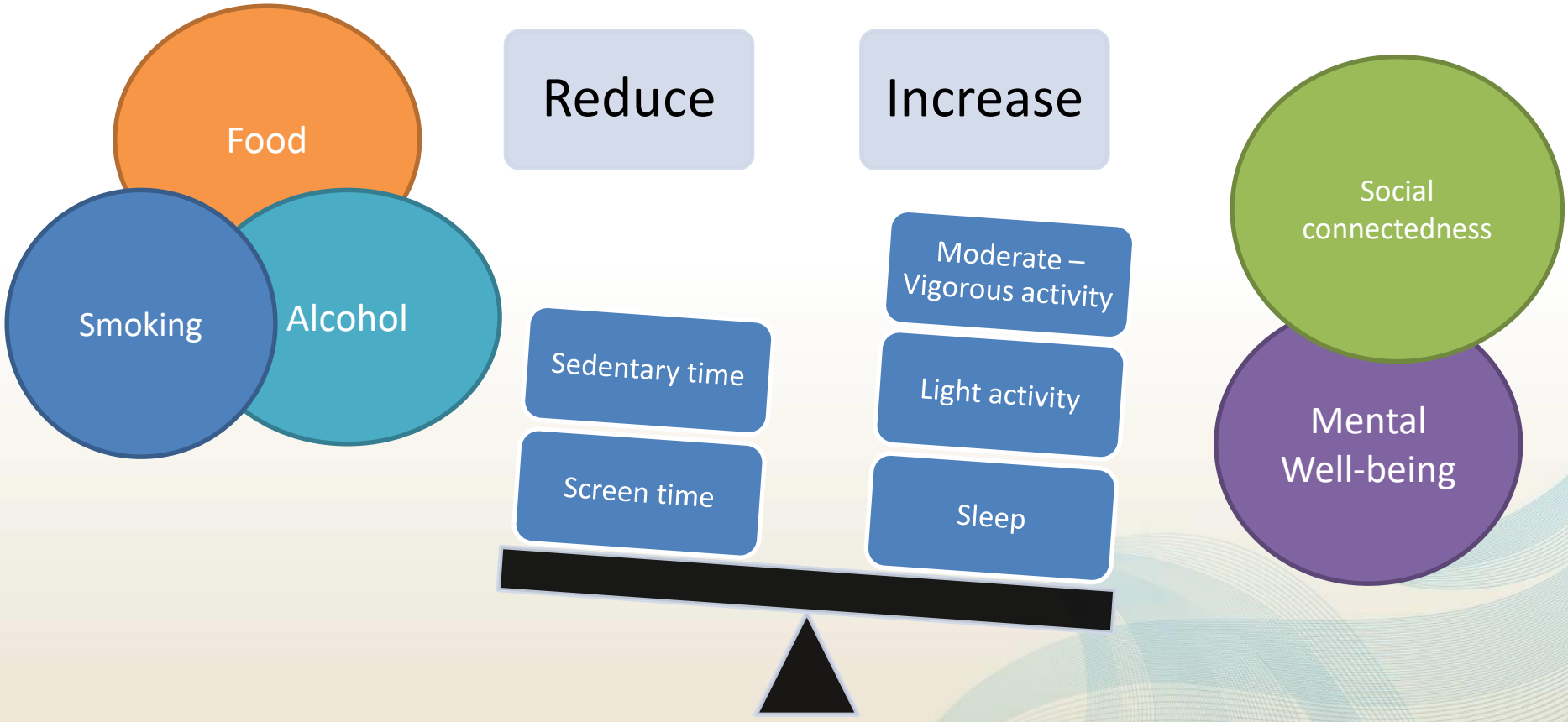
Editorial – This Week's BMJ

Sleep (or lack of it) is back in fashion. Two recent books, *Why We Sleep* by neuroscientist Matthew Walker and *The Business of Sleep* by clinical psychologist Vicki Culpin, warn in the strongest terms that regularly sleeping less than seven hours a night is a disaster for our mental and physical wellbeing.

As a culture, we in rich countries are in the throes of what Culpin calls "an epidemic of sleeplessness," increasing our risk of depression, anxiety, dementia, stroke, heart disease, obesity, cancer, diabetes, and road traffic crashes. Walker describes "low level exhaustion" as the accepted norm, with the same dire consequences, especially bad for night owls and for teenagers forced to function against their natural circadian rhythms.

Behaviours are connected



Context

Update of the Clinical Weight Management Guidelines for Children and Young People (2016) and Adults (2017)

- Recent evidence generally supported and/or strengthened 2009 Guideline recommendations
- Food, Activity (including reducing sedentary time) and Behaviour strategies – FAB approach for children and young people
- Four stage pathway still appropriate – Monitor, Assess, Manage, Maintain

Why Weight?

In 2016/17 NZHS

Adults	Mean weight	10 Years ago	Mean height	Mean BMI (kg/m2)
Male (15+)	87kg	84.7kg	175.8cm	28.1
Female (15+)	75.3kg	72.1kg	162.5cm	28.5
Children (aged 14 yrs)				
Boys	62kg	ns	168.3cm	
Girls	61.4kg	ns	163.2cm	

Where is the weight going?

Waist circumference:

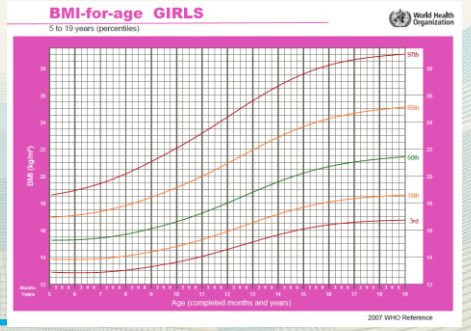
Across all population groups and ages waist circumference has slowly increased:

Males: 97.1 cm (95.1 cm in 2006/07)

Females: 88.4 cm (85.2 cm in 2006/07))

3 Changes:

- a shift in emphasis to regular monitoring and early intervention;
  - key recommendation for primary care being to regularly monitor height, weight and growth for all, and to provide brief advice if trending towards excess weight rather than waiting until a person is obese before intervening
- the introduction of a new growth chart for five to eighteen year olds (under development), and
- the inclusion of sufficient sleep as an aspect of weight management.



Sit Less, Move More, Sleep Well

New Physical Activity Guidelines for Children and Young People aged 5-17

A healthy 24-hours for children and young people includes:

- 9 to 11 hours per night (for those aged 5 to 13 years) and 8 to 10 hours per night (for those aged 14 to 17 years), with consistent bed and wake-up times
- at least 1 hour per day of moderate to vigorous physical activity - variety
- vigorous and muscle-strengthening physical activities at least 3 days a week
- no more than 2 hours per day of recreational screen time
- breaking up sitting time and participating in a variety of light physical activities for several hours.

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Sit Less, Move More, Sleep Well: Physical Activity Guidelines for Under-Fives

Regular active play, limited sitting, and enough good-quality sleep are important for a child's health and development.

Sit Less	Move More	Sleep Well
1. Provide regular activity breaks to limit the amount of time a child spends sitting. 2. Discourage screen time for under-two year olds and limit to less than one hour every day if two years or older – less is best! 3. Limit time in equipment that restricts free movement.	1. Provide fun activities (at least three hours every day for toddlers and pre-schoolers, spread throughout the day). 2. Include plenty of opportunities for active play.	1. Babies: 14 to 17 hours 2. Infants: 12 to 15 hours 3. Toddlers: 11 to 14 hours 4. Pre-schoolers: 10 to 13 hours

Why is sleep important?

Sleep is essential for growth and development

- Inadequate good-quality sleep is associated with:
- Weight
- School performance
- Driver safety
- Emotional and behavioural difficulties
- Risky behaviour
- Dietary intake

Children regularly sleeping less than the recommended amount 2x as likely to be overweight or obese

Food and Sleep

Sleep Ghrelin Leptin

Ghrelin – secreted by stomach wall, hormone that makes you hungry

Leptin – produced by adipose tissue, hormone that makes you feel full

Low leptin -> constantly hungry -> general slow-down in metabolism

Sleep problems

Common

- Up to 1/3 of parents of infants and toddlers report their child has a sleep problem that negatively impacts on the family
- 2/3 of adolescents report their sleep needs not met
- Note that sleep apnoea may be caused by obesity

Proposed mechanisms:

- Sleep deprivation impacts both sides of energy balance equation
- Greater time awake -> more time to eat more, and affects appetite regulation ->greater energy intake
- Less sleep -> feeling more tired -> less physical activity and decreased energy expenditure

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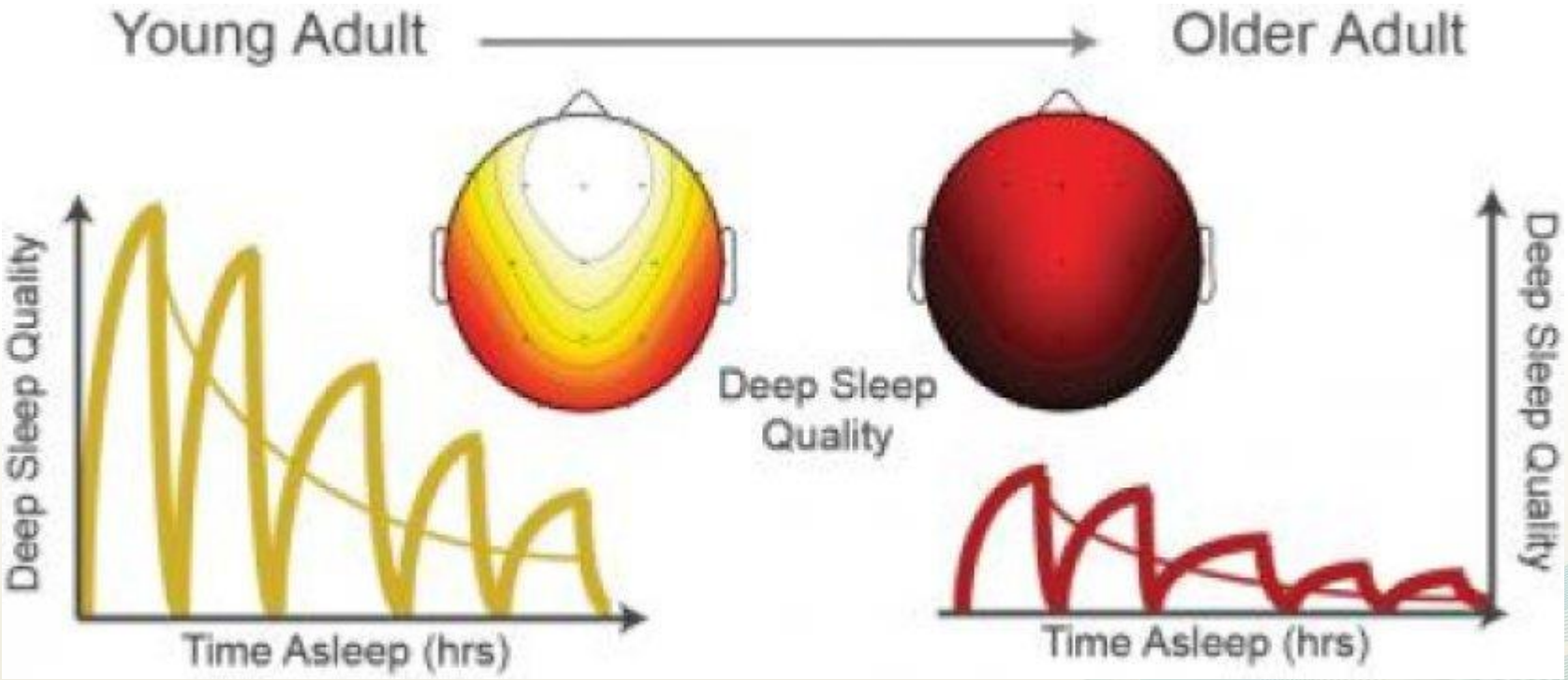
Sleep

Age group (years)	Recommended hours (rounded down to the nearest hour)	Percentage meeting recommendation (%)
Toddlers (2)	11 to 14	66
Preschoolers (3-4)	10 to 13	84
School-aged children (5-13)	9 to 11	77
Teenagers (14-17)	8 to 10	79
Young adults (18-25)	7 to 9	79
Adults (26-64)	7 to 9	74
Older Adults (65+)	7 to 8	53

Older adults



Sleep pattern changes with age

Neural activity during sleep differs between older and younger adults.
Credit: Courtesy of Matthew Walker and Bryce Mander

Older People

Quality of sleep is important

Sleep deterioration has been linked to such conditions as Alzheimer's disease, heart disease, obesity, diabetes and stroke.

Poor sleep affects cognition

Sleeping pills not the solution – poor substitute for normal sleep cycles

Aging -> a decline in deep non-rapid eye movement (NREM) or "slow wave sleep," and the characteristic brain waves (sleep spindles) associated with it,

Slow waves and spindles help transfer memories and information from the hippocampus (provides the brain's short-term storage), to the prefrontal cortex, which consolidates the information, acting as the brain's long-term storage.

= memory decline in later life

But wait…there's more

Age-related decline in ability to regulate neurochemicals eg galanin that stabilize our sleep and orexin which helps transition from sleep to waking states.

A disruption to the sleep-wake rhythm commonly leaves older adults fatigued during the day but frustratingly restless at night.

What can you do?

- Quality and Quantity both important
- Regular routine, and bedtime/wake up times
- Comfortable sleep environment
- Screen free bedroom, avoid screens before bed
- Avoid big meal before bed
- Getting outside during the day
- Regular physical activity
- Avoid caffeine and alcohol before bed

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Sleep tips for young children

Why is sleep important?

Sleep is important for restoring energy and for growth and development.

There is increasing evidence that not enough, or poor quality, sleep can negatively affect children's behaviour, learning, health, wellbeing and weight.

How much sleep does my child need in 24 hours?

The table below shows the recommended total hours of sleep (including naps) per day for children from birth to 5 years. Some children naturally sleep slightly less or more than the recommended time.

Age	Recommended (hours)
Newborn (0–3 months)	14–17
Infant (4–11 months)	12–15
Toddler (1–2 years)	11–14
Preschool (3–4 years)	10–13
5 year olds	9–11

Adapted from the National Sleep Foundation: How much sleep do we really need?

For more details, go to Sleep Tips for Young Children at health.govt.nz

It is not just the amount of sleep that is important but also the quality of that sleep. The following tips may be helpful.

How can I improve my child's sleep?

- Have a regular bedtime routine. This might include a bath, brushing their teeth, a story then bed. Quiet activities are good before bed. Avoid active games, playing outside and screen use (eg, TV, internet, computer games) in the hour before bedtime.
- Have a regular bedtime and wake up time. It helps your child to understand when it is time to sleep.
- Have a comfortable sleep environment. The place where they sleep should be quiet, warm and dark (though a night light is okay).
- Have no distractions in the place where children sleep, including TV, computer screens and portable devices.
- A meal within 1 to 2 hours of going to sleep is not recommended. However, a light snack may help some children.
- Avoid giving your child food and drinks containing caffeine as this can affect their sleep.
- It is normal for young children to have naps during the day. As they get older, they will need less sleep and fewer naps. If your child has a nap after 4 pm (except for newborns and infants), it may be harder for them to get to sleep at night.
- It is important for children to be active throughout the day. Activity can also help your child to sleep. Time spent in bright sunlight, such as being active outside, can also help children to sleep, but don't forget to be sunsmart! Avoid lots of activity in the hour before bedtime.
- Being unwell can also affect your child's sleep. If your child snores a lot or stops breathing for short periods while asleep, discuss this with your GP.

These tips were adapted from the Australian Sleep Health Foundation's Sleep Tips for Children.

Health Promotion Agency

Series of videos with advice on:

Starting the Obesity Conversation (Prof Hayden McRobbie)

Food in Pacific cultures (Mafi Funake-Tahifote)

Building relationships with Maori and whanau (Dr Kiriana Bird)

The role sleep plays in obesity (Assoc Prof Barbara Galland)

Getting children moving more (Jo Collin)

What is healthy eating (Angela Berrill)

http://nutritionandactivity.govt.nz/talking-about-childhood-obesity

Fatigue and Road Traffic Accidents

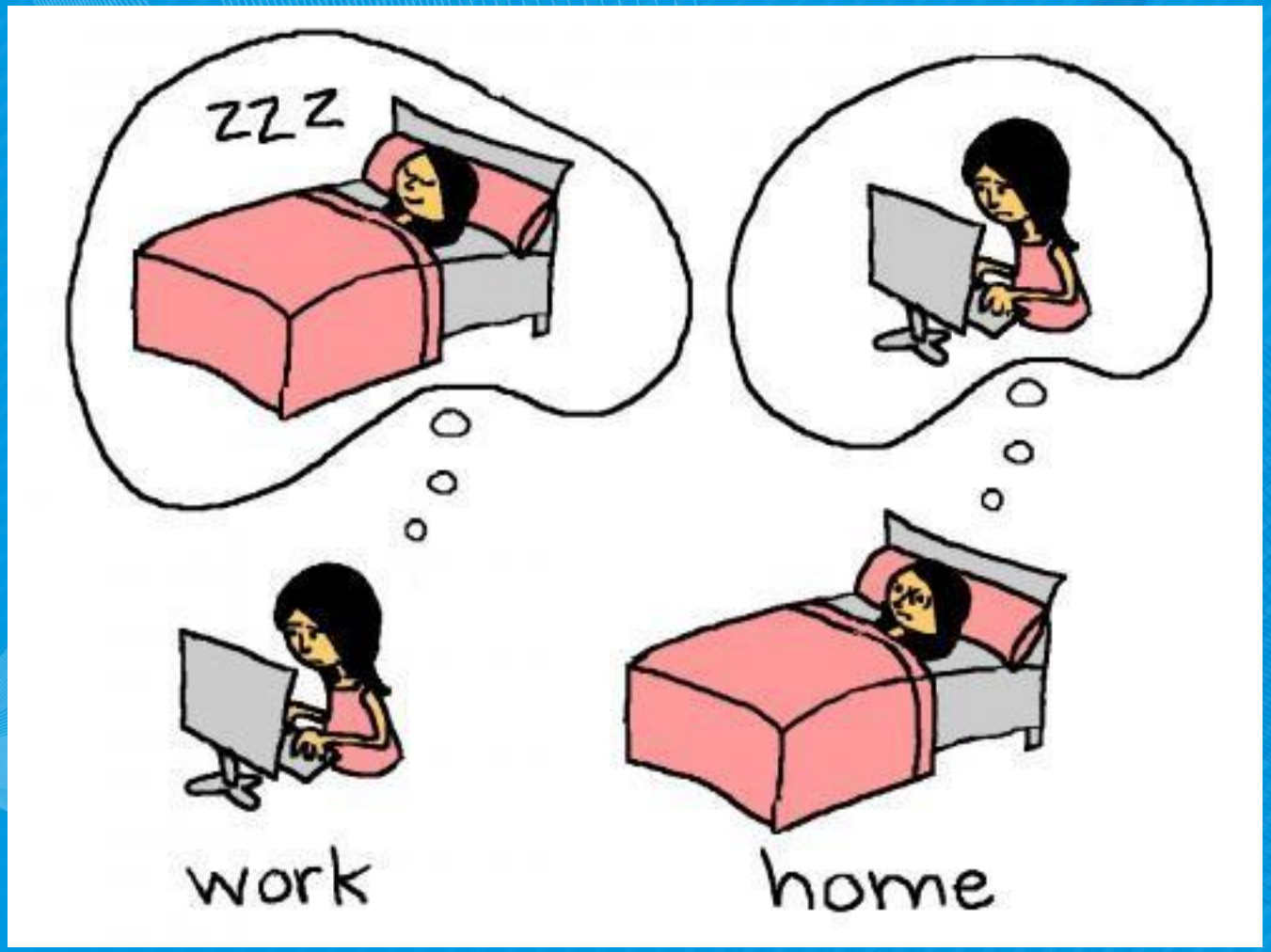
Fatigue results in slower reaction times. The faster people travel, the less time they have to react.

90% of fatal crashes involving fatigue occurred on the open road

Overall, 12% of all deaths from road traffic accidents due to fatigue (2014-2016)

Peak between 5 and 6am, and 3 and 6 pm (MOT)

For every 100 drivers or riders who died in road crashes in which fatigue was a contributing factor, 26 passengers and 24 other road users died with them.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