The Essence of Health and Managing Stress Mindfully

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The Essence of Health

- Education
- Stress management
- Spirituality
- Exercise
- Nutrition
- Connectedness
- Environment
Education

Associated with:
- Better physical and mental health
- Lower rate of dementia
- Healthier lifestyle
- Greater autonomy
- Decision-making ability
- Confidence
- Opportunities
- Social and economic advantage

Education is not just giving factual information, it is about knowing ourselves and enabling ourselves:
- Understanding our own minds and motivation
- Cultivating mindfulness
- Stress management
- Behaviour change strategies
- Goal setting
Current trends in happiness

- In developed countries depression is currently overtaking heart disease as the leading burden of disease
The mind and body

“You ought not to attempt to cure the body without the soul (psyche) for this is the great error of our day (400BC), in the treatment of the human body, that physicians separate the soul from the body.”

- Attributed to Socrates by Plato in Charmides
Stressful events and heart attacks

- **Earthquakes**
  - Major catastrophes like earthquakes produce a large but short-lived spike on the incidence of fatal heart attacks
  - Thought to only occur in individuals who are already susceptible.

- **Football**
  - FIFA World Cup (Germany 2006)
  - On days of matches involving the German team the incidence of cardiac emergencies was higher than usual
    - Men 3.26 times higher
    - Women 1.82 times
Allostatic load

- Prolonged stress leads to wear-and-tear on the body (allostatic load)
  - Mediated through the Sympathetic Nervous System

- Allostatic load leads to:
  - Impaired immunity, atherosclerosis, metabolic syndrome, bone demineralization
  - Atrophy of nerve cells in the brain
    - **Hippocampal formation:** learning and memory
    - **Prefrontal cortex:** working memory, executive function
  - Growth of **Amygdala** mediates fear response

- Many of these processes are seen in chronic depression and anxiety
“In conclusion, a human mind is a wandering mind, and a wandering mind is an unhappy mind. The ability to think about what is not happening is a cognitive achievement that comes at an emotional cost.”

Attention Deficit Trait

- Newly recognized neurological phenomenon: attention deficit trait (ADT)
  - Response to hyperkinetic environment

- Trying to deal with too much input, results in:
  - Black-and-white thinking; perspective and shades of grey disappear
  - Difficulty staying organized, setting priorities, and managing time
  - Feel a constant low level of panic and guilt
Mobile phone use and motor vehicle accidents

- Driver's use of a mobile phone within 5 min before a crash associated with fourfold increased likelihood of crashing (OR 4.1)
Multitasking

“In 2005, the BBC reported on a research study, funded by Hewlett-Packard, and conducted by the Institute of Psychiatry at the University of London, that found, workers distracted by e-mail and phone calls suffer a fall in IQ more than twice that found in marijuana smokers.”

Multi-tasking

On the performance levels of extreme multi-taskers: “These are kids who are doing 5, 6, or more things at once all the time. ... It turns out multi-taskers are terrible at every aspect of multitasking! They get distracted constantly. Their memory is very disorganized. Recent work we’ve done suggests that they’re worse at analytic reasoning. We worry that it may be we’re creating people who may not be able to think well, and clearly.”

Dr. Clifford Nass on his studies at Stanford University from
Simple and Complex Multitasking

- **Simple multitasking**: one task simple and the other complex (e.g. stirring pasta while talking to spouse) where one can be safely/effectively done on automatic pilot while the other is given attention.

- **Complex multitasking**: two complex activities which demand cognition (e.g. driving while speaking on phone) where one or both will be done unsafely/ineffectively.
Multitasking or task-switching?

- Multitasking is an illusion (misnomer)
- Switching happens so fast that it appears we are performing multiple tasks simultaneously like the concurrent performance of several jobs by a computer
- Reality is that we are switching back and forth between tasks
Three regions of the brain

- Frontal lobes (prefrontal cortex) centre for executive functioning
  - Attention regulation
  - Working memory
  - Reasoning and decision making
  - Emotional regulation
  - Appetite regulation
  - Impulse control
  - Directs immune system
- Limbic system – emotion centre
- Mesolimbic reward system – appetites
Burnout and psychiatric morbidity in new medical graduates

- 8 months into internship: 75% interns had burnout
- 73% (of interns) met criteria for psychiatric morbidity on at least one occasion

Doctor health and medical errors

- Study determined prevalence of depression and burnout among residents medical staff in 3 US hospitals
- 20% of residents met criteria for depression
- 74% met the criteria for burnout
- Depressed residents made 6.2 times as many medication errors as residents who were not depressed
What is mindfulness?

“The faculty of voluntarily bringing back a wandering attention over and over again, is the very root of judgment, character, and will. No one is compos sui if he have it not. An education which should improve this faculty would be the education par excellence.”

- William James, Principles of Psychology, 1890
Mindfulness

- Mindfulness is a mental discipline involving training attention.
  - It implies intention, presence and attitude (acceptance)
  - It is not a method of distracting ourselves or tuning out, it is about tuning in – engagement

- The anxious, stressed or depressed state of mind is the distracted state
  - Hence the negative impact upon mood, performance and enjoyment
Applications of mindfulness

- Mental health
  - E.g. depression relapse prevention, anxiety, panic disorder, stress, emotional regulation, addiction, sleep, eating disorders, psychosis

- Neuroscience
  - E.g. structural and functional changes in the brain, neurogenesis, (dementia prevention) amygdala, executive function, working memory

- Clinical
  - E.g. pain management, symptom control, cancer, metabolic, hormonal, weight management, genetic function and repair

- Performance
  - E.g. sport, academic, leadership

- Spiritual

Results suggest that MBSR may help a broad range of individuals to cope with their clinical and non-clinical problems. Grossman P. J Psychosomatic Research. 2004;57(1):35-43.
Symptoms of depression

- Depression can be understood as a disorder of attention
  - Depressive rumination – default mode
  - Not present – foreboding about future and reliving past
  - Poor functioning – distracted
  - Anhedonia – lack of pleasure / enjoyment
  - Reactivity – non-acceptance of state of thoughts and emotions
Default mode network

- Default mental activity flourishes in various forms of psychopathology including depression, anxiety, schizophrenia and autism
- Default activity decreased or deactivated when paying attention (e.g. experienced meditators)
- In experienced meditators but not novices, even when the default mode network is active, brain regions associated with self-monitoring and cognitive control are co-activated
  - Reduces vulnerability to default thinking
Mindfulness and depression

- Patients with 3 or more previous episodes of depression
- Mindfulness-Based Cognitive Therapy reduced relapse from 78% (what you would expect with usual treatment) to 36%
MBCT and depression

- RCT investigated the effects of Mindfulness-based cognitive therapy (MBCT) on the relapse in depression, time to first relapse and the quality of life
  - 106 recovered depressed patients with a history of at least 3 depressive episodes
  - Treatment as usual (TAU) vs MBCT plus TAU 1 year f/up
- Relapse/recurrence significantly reduced and the time until first relapse increased in the MBCT plus TAU c/w TAU
- MBCT plus TAU group also showed a significant reduction in both short and longer-term depressive mood, better mood states and quality of the life
Mindfulness, depression and the stress response

- Mindfulness negatively correlates with depressive symptoms and reactivity of the amygdala
Mental stimulation and brain health

- 65 healthy elderly (av. 76.1yrs) c/w 10 patients with Alzheimer Disease (74.8yrs) and 11 young controls (24.5yrs)
- ‘Brain health’ (amyloid deposits) c/w participation in cognitive activities (e.g. reading, writing, playing games)
- Greater participation in cognitively stimulating activities (particularly in early and middle life) associated with reduced amyloid uptake
  - The top ¼ of older participants for cognitive activity had amyloid uptake comparable to young controls
  - The lowest ¼ for cognitive activity had amyloid uptake comparable to patients with AD

Mindfulness and the brain

- Mindfulness training improves functioning in areas related to executive functioning, attentional control, self-regulation, sensory processing, memory and regulation of the stress response
  - Thickening of cortex in regions associated with attention, self-awareness and sensory processing thicker in meditators
  - “The regular practice of meditation may have neuroprotective effects and reduce the cognitive decline associated with normal aging.”
Essence program and student wellbeing

- Study of 2006 cohort of medical students found that 90.5% of students personally applied strategies

- Improved student wellbeing noted on all measures of wellbeing even in the pre-exam period
  - Reduced depression, hostility and anxiety subscale
  - Improved psychological and physical quality of life

Mindfulness and cognition

- Study on brief meditation training effects on cognition and mood
- Four sessions of either meditation training
- Participants were assessed with measures of mood, verbal fluency, visual coding, and working memory
- Mindfulness training improved mindfulness, mood, and reduced fatigue, anxiety, and increased visuo-spatial processing, working memory, and executive functioning

Stress-performance curve

- Peak performance
  - "The zone"
- Restful alertness

- Performance

- Inertia

- Stress

- Poor performance / burnout
Mindfulness and mental flexibility

- Mindfulness leads to:
  - reduced cognitive rigidity via the tendency to be "blinded" by experience
  - “a reduced tendency to overlook novel and adaptive ways of responding due to past experience, both in and out of the clinical setting.”

Mindfulness and doctor wellbeing

- An 8-week mindfulness program: improvements on all measures of wellbeing including:
  - Mindfulness
  - Burnout (emotional exhaustion; depersonalization; personal accomplishment)
  - Empathy and responsiveness to psychosocial aspects
  - Total mood disturbance
  - Personality (conscientiousness; emotional stability)

- Improvements in mindfulness correlated with improvements on other scales
Mindfulness and the workplace

- 8 week mindfulness program for ANU staff
- Key findings include:
  - Increased self-rated performance (ECDP)
  - Improved wellbeing (PANAS)
  - Improved eudaimonic wellbeing (meaningfulness) (PWB)
  - Increase in 2 subscales of work engagement (vigour and dedication) (UWES)
  - Increased authenticity (self-awareness, authentic behaviour, open relationships) (AI3)
  - Increased satisfaction with life (SWLS)
- Improvements sustained at 6 month f/up
  - Atkins P, Hassed C. Unpublished data.
Mindfulness, exercise & the cold

- RCT evaluating preventive effects of mindfulness meditation or exercise on incidence, duration, and severity of acute respiratory infection (ARI)
- Adults aged 50 years and older randomized to 1 of 3 study groups:
  - 8-week training in mindfulness meditation / training in moderate-intensity sustained exercise / observational control (no intervention)
- Number of ARI and illness days
  - Control group: 40 ARIs and 453 illness days
  - Exercise group: 26 ARIs and 241 illness days
  - Mindfulness group: 27 ARIs and 257 illness days
- ARI symptom severity
  - 358 for control, 248 for exercise, 144 for mindfulness
- ARI-related days of work missed
  - 67 in the control group
  - 32 in the exercise group
  - 16 in the mindfulness group
Roots of Diagnostic Errors

“Cognitive dispositions to respond that influence the diagnostic process are characterized by a lack of awareness and responsiveness by the individual to his or her own cognitive and affective processes.”

Confirmation bias: the pursuit of data that support a diagnosis over data that refute it

Anchoring bias: a resistance to adapting appropriately to subsequent data that suggest alternative diagnoses

Mindful practice

- Mindfulness is essential underpinning for self-monitoring

- “Mindful practice is conscious and intentional attentiveness to the present situation – the raw sensations, thoughts, and emotions as well as the interpretations, judgments and heuristics that one applies to a particular situation.”

- Avoids automatic pilot

Self-monitoring leads to;

1. Early recognition of cognitive biases
2. Avoidance of technical errors
3. Awareness of emotional reactions
4. Facilitation of self-correction
5. Development of therapeutic relationships
   - Epstein R et al, 2008
Emotional Intelligence & mindfulness

- Mindfulness related to aspects of personality and mental health
  - Lower neuroticism, psychological symptoms, experiential avoidance, dissociation
  - Higher emotional intelligence and absorption

<table>
<thead>
<tr>
<th>EI</th>
<th>Definition</th>
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<tbody>
<tr>
<td>Self-awareness</td>
<td>Ability to recognise and understand emotions, drives and effects</td>
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<tr>
<td>Self-regulation</td>
<td>Can control or redirect disruptive impulses, can think before acting</td>
</tr>
<tr>
<td>Motivation</td>
<td>Passion for work that goes beyond money or status, energy and persistence</td>
</tr>
<tr>
<td>Empathy</td>
<td>Ability to understand emotions of others, skill in interacting with others</td>
</tr>
<tr>
<td>Social skill</td>
<td>Can manage relationships and build networks, can find common ground, rapport</td>
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</table>
Meditation and compassion

- Limbic brain regions implicated in empathic response to another's pain
- Meditators have more active empathic response
  - Activation in insula greater in expert than novices
- Empathy w/o stress reduces carer fatigue
Genetic ageing and pessimism

- The combination of lower optimism and higher pessimism increases risk for disease and early mortality
  - Sample of healthy post-menopausal women

- Pessimism is independently associated with over 10 years accelerated ageing
  - Shorter Telomere length and higher Interleukin-6 concentrations
Mindfulness and cellular ageing

- Meditation may slow genetic ageing and enhance genetic repair
  - “...we propose that some forms of meditation may have salutary effects on telomere length by reducing cognitive stress and stress arousal and increasing positive states of mind and hormonal factors that may promote telomere maintenance.”
The importance of sleep

- Poor sleep is detrimental for mental and physical health and performance
  - E.g. poor immunity, depression, poor concentration
  - Poor sleep is a common cause of depression and much depression resolves with improved sleep
  - Regular sleep patterns (time of rising and going to bed) highly recommended
  - Avoid screen time close to bed time
  - If sleep is a problem then utilise behavioural approaches rather than medications (e.g. Sleep Better Without Drugs)
The role of meaning

- The lack of meaning in life is a soul sickness whose full extent and full import our age has not yet begun to comprehend.
  - Carl Jung

- Many different ways of exploring and expressing meaning
  - Philosophy, religion, science, altruism, environmentalism, art …
How does one define spirituality?

- **Spirituality**
  - Meaning
  - Connectedness
  - Sense of purpose
  - Belief in a ‘higher intelligence’
  - Philosophical inquiry

- “Religious commitment”
  - Overlaps with spirituality
  - Membership of religious group
  - Attends church
  - Religious upbringing

- Can be ‘religious’ without being ‘spiritual’
- Can be ‘spiritual’ without being ‘religious’
Religious commitment and health

- Religious commitment is widely used in the medical and psychological studies
  - Most common interpretation of spirituality / easy to measure

- Protective for:
  - Depression and suicide
  - Substance abuse
  - Physical illness
  - Longer life expectancy

- Links hold even when controlled for other risk factors
Religious commitment and suicide

- Religious commitment is inversely related to suicide risk including risk in those with co-morbidity such as childhood abuse and psychosis
Protecting adolescents from harm

According to large population studies of adolescents, among the most important protective factors for mental health and reduced risk of harm were ‘connectedness’ (esp. home and school) and ‘spirituality’

Religious commitment and longevity

- 22,000 people - 9 y f/up
- All-cause mortality reduced for those with active religious dimension to life
- Life expectancy
  - 75 y - non-attenders
  - 79 y - < once per week
  - 82 y - once per week
- Controlled for other variables
  - Demography 1999;36:273-85
- Significantly protective against all-cause mortality
  - relative hazard 0.64 and when controlled for social and physical variables still 0.76
  - Am J Public Health 1998;88:1469-75
Exercise levels in Australia

“In 2004-05, 70% of Australians aged 15 years and over were classified as sedentary or having low exercise levels. Of these, just under half (48%) recorded no or very little exercise in the previous two weeks (sedentary exercise level) and 52% recorded a low level of exercise.”

- ABS – Australian snapshots
Inactivity and health

- Chronic conditions related to inactivity include:
  - Heart disease
  - Hypertension
  - Type II diabetes
  - Cancer
  - Depression
  - Anxiety
  - Osteoporosis
  - Obesity
  - Parkinson’s Disease
  - Dementia …

- Put another way: physical exercise is therapeutic for these and other conditions

- Exercise has protective effect via many pathways e.g.:
  - Metabolic
  - Genetic
  - Physiological
  - Immunological
  - Neurological
How fast does the Grim Reaper walk?

- Population based prospective study on 1705 elderly men (>70y/o) over 2 ½ years
- Older men who walked faster than 0.82 m/s were 1.23 times less likely to die than those who walked slower
- No men with walking speeds of 1.36 m/s or greater had contact with Death
- “As none of the men in the study with walking speeds of 1.36 m/s (about 5 km/hr) or greater had contact with Death, this seems to be the Grim Reaper's most likely maximum speed; for those wishing to avoid their allotted fate, this would be the advised walking speed.”

Exercise and mental health

- Elevation of mood seen with aerobically based exercise programs in both the healthy and clinically depressed
  - Antidepressant and anti-anxiety effects
- Also useful in alcohol and substance abuse
- Mechanism of action in depression:
  - Self esteem
  - Therapeutic distraction from worries
  - Improvement in general health
  - Release of pent up hostility
  - Increased serotonin
  - Improves insomnia

Physical activity & academic performance

- High overall sports participation: less likely to participate in a range of risky behaviors
  - Adolescent risk behaviors (eg, truancy, cigarette smoking, sexual intercourse, delinquency), other weekly activities (eg, work, academic performance, sleep), self-esteem.

- Active teens less likely to have low self-esteem and more likely to have higher grades (eg, active in school).
Physical exercise and cancer survival

- 2987 women with breast cancer followed for up to 18y
  - Risk of death halved for those who engaged in >9 MET-hr/wk (~ walking 3-5 hr/wk)

- 47620 men, ~3000 with prostate cancer, 14y follow-up
  - In men >65 1/3 risk of advanced prostate cancer

- 526 patients with colorectal cancer followed for over 5y
  - Risk of death halved for stage II&III
Exercise and dementia

- Physical exercise, even if moderate, protective against cognitive decline and stimulates growth of new brain cells (neurogenesis)
- Exercise halves risk of Alzheimer’s Disease
- For patients already suffering from dementia, physical exercise, especially when combined with music, is associated with improved cognitive function within weeks
Exercise, stress & telomeres

- For non-exercisers a one unit increase in the stress scale related to a 15-fold increase in the odds of having short telomeres (a marker of rapid ageing and chronic illnesses).

- For exercisers, perceived stress was unrelated to telomere length (i.e. exercise buffered against the effects of emotional stress on ageing).
Perceived stress, telomere length and exercise

- Physical activity categories are based on whether the participant met CDC recommended levels of exercise per week. Perceived stress ratings are based on the Perceived Stress Scale. The relationship between perceived stress and telomere length was significant in sedentary participants only.
Types of exercise

- Aerobic – e.g. running (makes you puff)
- Resistance – e.g. weights (strength)
- Balance / flexibility – e.g. yoga, pilates, tai chi
## Disease prevention recommendations

<table>
<thead>
<tr>
<th>Illness</th>
<th>Recommended exercise modality</th>
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<tbody>
<tr>
<td>Arthritis</td>
<td>Aerobic / Resistance</td>
</tr>
<tr>
<td>Cancer</td>
<td>Aerobic</td>
</tr>
<tr>
<td>Chronic renal failure</td>
<td>Aerobic / Resistance</td>
</tr>
<tr>
<td>Heart failure</td>
<td>Aerobic / Resistance / Balance</td>
</tr>
<tr>
<td>Coronary heart disease</td>
<td>Aerobic / Resistance / Balance</td>
</tr>
<tr>
<td>Dementia</td>
<td>Aerobic</td>
</tr>
<tr>
<td>Depression</td>
<td>Aerobic / Resistance / Balance</td>
</tr>
<tr>
<td>Osteoporosis</td>
<td>Aerobic / Resistance / Balance (falls prevention)</td>
</tr>
<tr>
<td>Stroke</td>
<td>Aerobic / Resistance / Balance for rehab.</td>
</tr>
<tr>
<td>Type-2 diabetes</td>
<td>Aerobic / Resistance</td>
</tr>
</tbody>
</table>

Adapted from Fiatarone-Singh M. (2007) Physical fitness and exercise.
**MET**

- One MET equivalent to the resting metabolic rate (energy expenditure in kcals/min)
- Optimal health in middle age associated with approximately 12-15 MET

<table>
<thead>
<tr>
<th>Activity</th>
<th>METs</th>
<th>Kcal/hr</th>
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<tbody>
<tr>
<td>Sleeping</td>
<td>1.0</td>
<td>80</td>
</tr>
<tr>
<td>Desk work</td>
<td>1.5</td>
<td>110</td>
</tr>
<tr>
<td>Driving</td>
<td>1.6</td>
<td>120</td>
</tr>
<tr>
<td>Sitting</td>
<td>1.4</td>
<td>100</td>
</tr>
<tr>
<td>Walk (3k/h)</td>
<td>2</td>
<td>150</td>
</tr>
<tr>
<td>Walk (5k/h)</td>
<td>4</td>
<td>330</td>
</tr>
<tr>
<td>Swimming</td>
<td>4</td>
<td>300</td>
</tr>
<tr>
<td>Tennis</td>
<td>5</td>
<td>420</td>
</tr>
<tr>
<td>Shovelling</td>
<td>5</td>
<td>400</td>
</tr>
<tr>
<td>Cycling</td>
<td>6</td>
<td>440</td>
</tr>
<tr>
<td>Squash</td>
<td>8</td>
<td>600</td>
</tr>
<tr>
<td>Run-jog</td>
<td>8.7</td>
<td>640</td>
</tr>
<tr>
<td>Run-fast</td>
<td>16.3</td>
<td>1200</td>
</tr>
</tbody>
</table>
There are a lot of perceived barriers to exercise
  - E.g. time, money, pain, convenience...

Important to be aware of them and be able to find ways around them
Nutrition and depression

- Omega-3 fatty acids, folate, vitamin E, vitamin B6, vitamin D, S-adenosyl methionine, phenyalanine and dark chocolate
- Reducing or avoiding alcohol, sugar and caffeine
  - British Journal of Psychiatry 2007
Nutrition and mental health

Study of 7114 adolescents aged 10-14 years: Healthy and unhealthy diet quality scores compared with incidence of depression

- Adjusted for age, gender, socioeconomic status, parental education, parental work status, family conflict, poor family management, dieting behaviours, body mass index, physical activity, and smoking

Compared to the lowest quintile, the adjusted OR for symptomatic depression across increasing quintiles of the unhealthy diet score were:

- Q1 = 1.00, Q2 = 1.03, Q3 = 1.22, Q4 = 1.29, Q5 = 1.79

“Our results demonstrate an association between diet quality and adolescent depression that exists over and above the influence of socioeconomic, family, and other potential confounding factors.”

Calorie restriction

- “Caloric (or dietary) restriction (CR) extends lifespan and lowers risk for age associated diseases.” including cancer and heart disease
  - Willcox DC, Biogerontology. 2006 Jun 30; [Epub ahead of print]

- CR is not under-nutrition but having a diet which does not contain calories excess to requirements
  - Most westernised diets are calorie-dense (empty calories with little nutritional value)
Omega-3 f.a. and the heart

- Review of 97 trials on (anti-lipidemic) ‘cholesterol-lowering’ drugs
- Most effective therapy for reducing all-cause and cardiac mortality was omega-3 fatty acids
  - High concentrations in fish and flaxseed oils
- N-3 fatty acids should be the preferred and first-line treatment for high cholesterol (hyperlipidemia)
- Clearly superior for effectiveness, side-effect profile, availability, cost and safety
Nutrition and telomeres

- Associated with shorter telomeres
  - Smoking
  - Processed meat
  - High BMI
  - High homocysteine

- Associated with longer telomeres
  - Vitamin D
  - Folate
  - Omega-3 f.a.
  - Vitamin C
  - Vitamin E

Lifestyle and cancer: WCRF

1. Be as lean as possible without becoming underweight
2. Be physically active for at least 30 minutes every day
3. Calorie restriction: avoid sweet drinks and limit energy-dense foods particularly processed foods high in added sugar, low in fibre, or high in fat
4. Eat more of a variety of vegetables, fruits, whole-grains and pulses such as beans
5. Limit red meat, e.g. beef, pork and lamb, avoid processed meat
6. Limit alcoholic drinks to 2 for men and 1 for women a day
7. Limit consumption of salty foods and food processed with salt

http://www.wcrf-uk.org/research_science/recommendations.lasso
Nutrition and breast cancer

- “Women in the highest quartile of plasma total carotenoid concentration (marker of intake of vegetables and fruit) had significantly reduced risk for a new breast cancer event (HR 0.57).” (i.e. a 43% reduction in risk and controlled for other factors influencing prognosis.)

- “For genistein (phytoestrogen), the risk estimate (breast cancer) for the highest versus the lowest tertile was 0.68 (95% CI, 0.47 to 0.98).”

- RCT on women with 2437 women with breast cancer found that a low-fat diet was associated with a 24% reduction in recurrence and 19% improvement in survival after 5 years
Weight management

- Achievable and sustainable goals
- Positive attitude towards food
- Non-hungry eating
- Being physically active
- Body image
- Slowing down
  - Kausman R. If not dieting then what?
Social support

- High social support associated with:
  - Better mental health
  - Less heart disease
  - Greater longevity
  - Less substance abuse
  - Better immunity
  - Less dementia

- Quantity and quality both important
- Social isolation associated with poorer health
Social isolation and health

- Social isolation associated with double death rates independent of other lifestyle variables
- Social interactions important for both quantity and quality
- Protective are:
  - Marriage
  - Contact with family and friends
  - Religious dimension
  - Group affiliation
Bereavement and immunity

- Significant immunosuppression during bereavement
- Six times higher rate of pneumonia in year post-bereavement
- Even more significant immunosuppression during marital separation
Connectedness and adolescent health

- Parent-family connectedness and perceived school connectedness protective against health risk behaviors

“Family and school contexts as well as individual characteristics are associated with health and risky behaviors in adolescents ... diminish risk factors and enhance protective factors for our young people.”

Marriage and health

- Review of nearly 300 references indicated that marriage, and in particular healthy marriage, is beneficial for good social, mental and physical health.

- Marriage protective for both men and women.
Environment

- Environment impacts upon every aspect of mental and physical health
- ‘Environment’ can mean different things
- Ecology: climate, air, water, soil, radiation
  - E.g. living near high voltage power lines or a freeway entrance associated with illness
- Social: home, friends
- Educational: school
- Urban: home, architecture, town planning, safety
Some health effects of environment

- Health
  - E.g. air quality, infections or chemical exposures
- Emotions
  - E.g. sports crowd or garden
- Behaviour
  - E.g. casino, retail, health messages
- Productivity
  - E.g. workplace or study space
- Social interactions
  - E.g. service provider or restaurant
- Opportunities
  - E.g. social advantage or school
- Safety
  - E.g. occupational exposures or natural dangers
- Lifestyle
  - E.g. exercise and safety, availability
Sunlight

- Too much sunlight
  - BCC, SCC
  - Premature ageing of skin
  - Cataracts

- Sunburn
  - Malignant melanoma

- Message: avoid sunburn but not regular moderate sun exposure especially in winter months

- If inadequate sun exposure then most need Vit D supplements

- Over 1/3 of Australian population now vitamin D deficient

- Sunlight important for maintaining vitamin D

- Regular, moderate sun exposure beneficial for, or protective against:
  - Coronary Heart Disease
  - Various cancers including malignant melanoma
  - Mental Health (e.g. depression)
  - Rickets, osteomalacia and fractures
  - Psoriasis
  - Autoimmune disorders (e.g. Multiple Sclerosis, Rheumatoid Arthritis, Inflammatory Bowel Disease…)
  - Diabetes

Psychosocial factors may contribute to development and promotion of CAD in 3 basic ways: (1) promote pathogenesis of atherosclerosis; (2) contribute to maintenance of unhealthy lifestyle behaviors, such as smoking and a poor diet; (3) coexisting psychosocial stresses form a barrier to successful modification of lifestyle behaviors.

Rozanski Circulation 1999;99:2192-217
Is heart disease reversible?

- Heart disease is reversible given the right lifestyle
  - Significant improvement possible in both the disease progression and quality of life.

- People with already well established CVD given conventional medical management plus or minus an intervention (comprehensive lifestyle program)
The Ornish Program

- People followed angiographically and symptomatically
- The program (intervention) consisted of:
  - group support
  - stress management consisting of meditation and yoga
  - a low fat vegetarian diet
  - moderate exercise
  - stopping smoking
- Stress management was central to being able to improve other lifestyle risk factors
# Results

<table>
<thead>
<tr>
<th></th>
<th>Intervention</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Progression</strong></td>
<td>82% regressed</td>
<td>53% progressed</td>
</tr>
<tr>
<td><strong>Symptom frequency</strong></td>
<td>91 ↓</td>
<td>165↑</td>
</tr>
<tr>
<td><strong>Duration</strong></td>
<td>42 ↓</td>
<td>95↑</td>
</tr>
<tr>
<td><strong>Severity</strong></td>
<td>28 ↓</td>
<td>39↑</td>
</tr>
</tbody>
</table>
Reduction in healthcare costs

- $3,900 for the Ornish program
- C/w $40,000 for bypass surgery
- Average cost savings were $US58,000 per patient after 3 year follow-up
Five year follow-up of Ornish program

- Most of the original intervention group maintained changes
- Outcome for Ornish group was even better blood flow through the coronary arteries
- 2.5 times the risk for cardiac events 2.47 in control group

JAMA 1998;280:2001-7
Ornish program for cancer

- 92 men with early prostate cancer who chose to watch and wait
- Randomised to lifestyle (experimental) group vs. usual treatment (control) group
Ornish lifestyle intervention

- Vegan diet
  - Fruits, vegetables, whole grains, legumes and soy
  - 10% calories from fat
  - Supplemented by soy (tofu), fish oil (3gm daily), vitamin E (400IU daily), selenium (200mcg daily), vitamin C (2gm daily)

- Exercise
  - Walking 30min 6 times weekly

- Stress management
  - Gentle yoga, meditation, breathing and PMR

- Support group 1 hour weekly
PSA readings

- After 1 year PSA decreased by 4% in experimental group and increased by 6% in control group.
- No patients in the lifestyle group had gone on to have aggressive prostate cancer vs. 6 in the control group.
- The more people applied the program the better their outcome.

Ornish lifestyle intervention

- 2-year follow-up
  - 27% (13/49) patients in control group have gone on to require cancer treatment because of disease progression but only 5% (2/43) patients in lifestyle group

- Ornish program down-regulated prostate cancer gene expression

- Comprehensive lifestyle change increased genetic repair (telomerase activity)
Lifestyle change and telomeres

- Telomere shortness is a prognostic marker of ageing, disease, and premature illness
- 5 year follow-up study to investigate long-term effects of lifestyle change on telomere length on men who had biopsy-proven low-risk prostate cancer
- Intervention group followed a programme of comprehensive lifestyle changes (low fat vegan diet, exercise, stress management, meditation and social support)
- Control group underwent active surveillance alone
- At 5 years compared relative telomere length and telomerase activity and their relation to the degree of lifestyle change
Relative telomere length increased from baseline in the lifestyle intervention group, but decreased in the control group.

Adherence to lifestyle change significantly associated with relative telomere length after adjustment for age and the length of follow-up.

“Our comprehensive lifestyle intervention was associated with increases in relative telomere length after 5 years of follow-up, compared with controls, in this small pilot study. Larger randomised controlled trials are warranted to confirm this finding.”

Lifestyle and MS

- Study on 5-day residential retreat for people with MS (based on Prof Jelinek’s Overcoming MS program) promotes lifestyle modification within a patient-centred model of care

- Analysis of the health-related quality of life (HRQOL) of the retreat participants was undertaken using the MSQOL-54, prior to attendance, 1 and 5 years after the retreat

- 274 retreat participants (71%) completed baseline questionnaires
Lifestyle and MS

- Participants demonstrated clinically and statistically significant improvements in HRQOL.
- At 1 year median improvements of 11.3% in overall QoL:
  - 18.6% in the physical health
  - 11.8% in the mental health
- At 5 years there was a 19.5% median improvement in overall QoL compared to baseline:
  - 17.8% in the physical health
  - 22.8% in the mental health
- “Non-drug therapies should be considered as part of any comprehensive treatment plan for people with MS.”
SMART goals

- **SMART** stands for:
  - Specific
  - Measurable
  - Attractive
  - Realistic
  - Timely

- Mnemonic to provide a framework for successfully setting goals

- Goals are often not achieved because one or other of the steps were not attended to.
SMART goal activity

- Set a SMART goal for yourself