Health science notes

Health Sciences (The University of Western Ontario)

Class 1

What is health?

- Used to think it was cheating death
- The absence of something bad
- Once knew enough about diseases, starting learning about prevention to achieve health
- Next came vaccinations that concluded that we should expose people to a little bit of disease to build their immune system
- Currently focused on genomic health and personalized health. (not covered in this class)
- Health is a **resource** of life, not an objective
- WHO: "health is the complete mental, physical, social well being. Not just the absence of disease or injury"
- Wellness: living life full and happily
    - Not a static goal, work towards it

Definitions:

- **Health** is the overall condition of the body or mind and the presence or absence of illness or injury
- **Wellness** is optimal health and vitality, encompassing all the dimensions of well-being
    - **We have more control over these factors than health factors**
- **Social determinants** of *health* are the factors which can influence the health of individuals or groups
    - **Some of these factors are out of our control**
- **Risk factors** increase one's chances of disease or injury
- **Health promotion** enables people to increase control over and improve their health
- **Chronic disease** develops and continue over a long period of time
- **Life style choices** are conscious behaviours that can increase or decrease one's risk of disease or injury
- **Sex** biological or physiological characteristics that define men and women
- **Gender** roles, behaviors, society deems acceptable for men and women
- **Genome** complete set of genetic material in an individual's cell
- **Genes** the basic units of heredity; contains chemical instructions for making proteins

TABLE 1.1

Social Determinants of Health

The Canadian Public Health Association identifies 14 key social determinants of health for both populations and individuals, the latter of which is the focus of this text. Some determinants are discussed throughout this chapter, and others are highlighted in the Dimensions of Diversity boxes throughout the entire text.

• Income and income distribution	• Social safety network
• Education	• Employment and working conditions
• Unemployment and job security	• Social exclusion
• Early childhood development	• Aboriginal status
• Food insecurity	• Race
• Housing	• Health services
• Gender	• Disability

Source: Canadian Put http://www.cpha.ca/ January 14, 2014).

- **Target behavior** An isolated behavior you want to change
- **Self efficacy** belief in your ability to take action
- **Locus of control** The figurative place a person designates as he source of responsibility for the events in his or her control

*Wellness is the new health goal

Health can have some factors that are out of our control

- Case study: “if you have pain on the left side of your chest, you may be having a heart attack”. This study was only done on men and as a result many women died because they had pain not exclusively on their left side of their chest.

Top 5 leading causes of death for 16-25 year olds

1. Accidents
2. Suicide
3. Cancer
4. Homicide
5. Heart disease

There have been six dimensions of wellness identified

1. Physical
    - Not just your body’s overall condition, but also your fitness level and your ability to take care of yourself.
    - Influences how long your going to live
        1. Ex: eating well, going for checkups
        2. Higher your fitness level, higher your physical wellness
2. Emotional
    - Ability to understand how to deal with your feelings
    - Attending to your own thoughts and feelings, identifying obstacles,
        1. Ex: being optimistic, having a high self esteem
3. Intellectual
    - Challenge your mind
    - Open to new ideas
    - Think critically
4. Interpersonal

- relationships with others
- the ability to form and maintain relationships that are satisfying and supportive
    1. Ex: communication, participate and contribute to society, capacity for intimacy

5. Spiritual
    - may or may not mean religious
    - capacity to love
    - meaning of purpose in life
6. Environmental
    - The livability of the surroundings
    - Our personal health also depends on the planet's well being
    - Can change your location to improve health or change the hazards in your life

Occupational wellness:

- Level of happiness and fulfillness you gain through your work
- Doesn't go hand in hand with high salaries
- Key aspects:
    - Enjoyable work
    - Job satisfaction
    - Recognition
    - Feeling of achievement
    - Opportunities to learn and grow
- Financial security (being comfortable with your financial situation) can contribute to your peace of mind. If financially secure, you can worry less as well, money problems are a source of stress and is a contributing factor in many divorces and suicides.
- Career experts suggest setting career goals that reflect your values.

*Today, the leading causes of death in Canada is chronic diseases, such as cancer, heart disease and strokes.

The way we look on the world is called a **world view** and this is based on a bunch of **assumptions**

- Ex: pessimists have a negative world view and this may have resulted from a rough world view
- Even people who live in the same household and have the same things happen to them could have different worldviews- its all about outlook

Belief about change:

- Internal locus of control
    - I determine what happens to me
    - I am in control
    - Crisis could be trying to control everything and still bad things happen
- External locus of control
    - Believe that god or other spiritual things control aspects of my life

- Everything happens for a reason
- Life just happens and it is out of control
- Crisis could be not feeling in control

Life management

- **Behaviour change** is a lifestyle-management process that involves cultivating health behaviours and working to overcome unhealthy ones
- first choose target behavior you want to change and for it to be attainable
- boost self efficacy: the confidence in your ability to change
-

Transtheoretical model of behavior change

- Precontemplation➔
  - unaware of the problem
  - no intention of changing for 6 months
- Contemplation➔
  - aware of the problem and of the desired behavior change
  - unsure of how to proceed
- Preparation➔
  - intends to take action within a month
  - starts to make small changes
- Action➔
  - Plan is implemented
  - changes sustained for 6 months
  - risk of reverting back
- Maintenance➔
  - works to sustain the behaviour change
  - takes 6 months-5 years
  - higher confidence and self efficacy
- Termination➔
  - no desire to revert back to old habit
  - new self image

Staying on course

- Not linear process
- Relapse is not failure
- You can re-initiate the process
- Many starts and stops
- Commitment
- Need to identify the barriers and the encourages
- Join with others
- Celebrate your efforts and successes

Your Personalized Success Plan

- Monitor your behaviour and gather data

- Analyze the data and identify patterns
- Be SMART about setting goals
    - **Specific**
    - **Measurable**
    - **Attainable (physically able to do it)**
    - **Realistic**
    - **Time frame specific**
- Devise a plan of action
    - Get what you need
    - Modify your environment
    - Control your related habits
    - Reward yourself
    - Involve people around you
    - Plan for challenges
- Make a personal contract
- *if commitment is your problem, wait until the behavior you are dealing with is making you unhappier; than your desire to change it will be stronger

Stress Barrier:

- look at sources of stress
- if stressor is temporary, put change on pause
- is stressor is always, learn how to manage it

Integrated Pan-Canadian Healthy Living Strategy:

- created in 2012
- estimated total cost of disability, illness, and death is $190 billion' but only $68 billion go to treatment
- Goal: address the diseases common, preventable risk factors and the underlying conditions in society that contribute to them
- 2 initiatives:
    - to make the prevention of disease, disability and injury; and health promotion priorities
    - decreasing the prevalence of childhood obesity
- their other goal was to increase physical activity and healthy eating
- Healthy eating objective: increase by 20% the proportion of Canadians who make healthy food choices
- Physical activity objective: increase by 20% the proportion of Canadians who participate in regular physical activity based on 30 min/day physical activity
- Healthy weight objective: increase by 20% the proportion of Canadians at a healthy body weight based on BMI of 18.5-24.9

stats:

- 33% of Canadians who die in alcohol related car accidents are between 16-25
- 60% of Canadians are overweight or obese

Health Issues for Diverse Populations

- many health issues concern us all equally
    - we all need to eat well, exercise, manage stress, etc.
- some populations have a predisposition (genetically) for certain diseases
- some people are more likely to get diseases from their environment or how they were brought up
- issues when we say this:
    - we may stereotype
    - we can't talk about people as a group, rather than individuals
    - we may overgeneralize
    - we can't group people together
- Different dimensions when talking about health and wellness:
    1. sex and gender
        - sex: biology
            - ex: women menstruate
        - gender: societies' roles and expectations for different genders can affect one's wellness
            - ex: men tend to smoke more than women
            - women tend to make less money than men
    2. ethnicity
        - some diseases are concentrated in certain gene pools
        - different cultures have different traditional diets
        - different family relations
        - different attitudes towards alcohol and tobacco
            - 4.3% Canadians are Abororiginal
                - 13 years younger on average➔ high birth rates, higher infant mortality rates on reserves, adults live shorter lives
                - 1.5-2 times as likely to get heart disease
                - 3-5 times as likely to get diabetes
                - 30 times as likely to get tuberculosis
                - tend to get significantly less physical activity
                - more likely to abstain from alcohol; but have higher binge drinking rates
    3. income
        - tend to have higher death rate
        - low income usually goes hand in hand with poor education and tend to live in bad areas
        - A study in 2006 found that poor people living in wealthy neighbourhoods had higher mortality rates than poor people living in lower-income areas, perhaps because of the higher cost of living or psychosocial stressors.

    4. education
    5. disability
        - may be less active due to disability
        - perceive themselves as having a disability

        - 1 in 10 Canadians, and a third of seniors have a disability at some level
        - more likely to be overweight and depressed
    6. geographic location
        - some areas may lack physicians or good food
        - may be in area where it is less likely to finish school (rural Canada)
        - more likely to not wear seatbelts in rural areas
    7. orientation
        - gays, lesbians, bi, experience increase social pressures
        - more likely to to be involved with risky behavior of suicide
            - ex: HIV
- Culture and Lifestyle
    - The different behaviours between cultures effect our wellness positively and negatively.
- Discrimination
    - Discrimination and racism are stressful events that can cause psychological distress and increase the risk physical and psychological problems.
    - Bias in medical care can directly affect treatment and health outcomes.
    - When given more information on patients backgrounds it is easier for professionals to detect some genetic diseases or to overcome language or cultural barriers.

Factors that influence wellness:

- behavior
    - connection between healthy habits and health
    - easier to do good habits young rather than get rid of bad habits later on
- family health history and hereditary
    - your genes can determine your health
    - your more prone to some diseases if it runs in your family
        - knowing your family history can help you know which diseases are of special concern for you
    - errors in our genes are responsible for 3500 hereditable conditions
        - ex: sickle cell, cystic fibrosis
    - more commonly, genetic alterations only happen at individual level, and the disease results from interacting with many other genes and factors
        - ex: diabetes has gone up as obesity has gone up

- environment
    - air you breathe, water you drink
    - area of high crime
    - exposed to lots of tobacco or sun radiation
- access to health care
    - improve quality and quantity of life
    - preventative and treatment of disease

Choosing wellness:

- 62% of Canadians 12 and older rate their health as either excellent or very good
- 5.2 % of Canadians diagnosed with diabetes, but many more have it and don't know it
- 33% of students reported being overweight. Could be due to:
    - overeating
    - snacking on junk food
    - eating high fat foods
    - alcohol/binge drinking
- 40% students said they didn't use a condom the last time they had sex
- 60% of students said they had at least 3 drinks the last time they went out
    - 20% of them said they had more than 7
- benefits of wellness: more energy, greater vitality, greater feelings of appreciation and curiosity, higher quality of life
- 50-70% of students aren't active enough

Building a motivation to change

1. examamine the pros and cons of change
2. Boost self efficacy
    a. Locus of control
    b. Visualization and self talk
    c. Role models and other supportive individuals
    d. Identify and overcome barriers of change

Devise a Plan of action

1. Get what you need
2. Modify your environment
3. Control related habits
4. Reward yourself
5. Involve people around you
6. Plan for challenges

Make a personal contract

- Include:
    - The date you'll start
    - The steps you'll take to measure your progress
    - Strategies you plan to use to promote change
    - Date you expect to reach your final goal

Chapter 2

Outlook

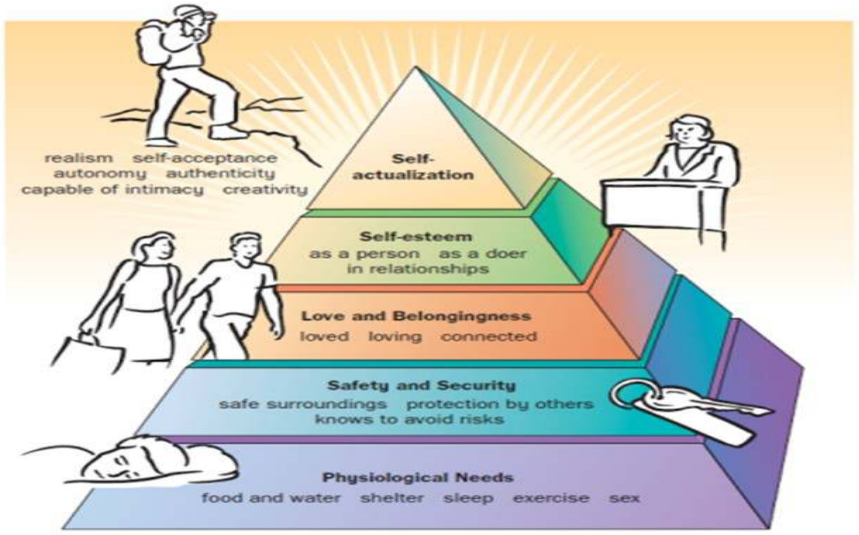
Evolution
Options→ Choices
Locus of control
- neither one is good or bad and we don't only use one, but we have an affinity towards one

Autonomy
- outlook shapes our sense of autonomy (self ruling)

what is psychological health?
It is:
- Our capacity to think, feel, and behave in ways that contribute to our ability to enjoy life and manage challenges.
  - Can be supported or sabotaged by, dietary habits, sleep and relationships
- Not merely the ***presence of wellness*** or the ***absence of sickness…***
  - Psychological health is influenced by a variety of factors (e.g., diet, sleep patterns, relationship issues).
- Fulfillment of human potential

It is not:
- **Psychological health is not the same as psychological *normality.***
  - Abnormal psychology: things that fall outside of the normal curve; determined mathematically and socially. Most people fall in the normal
- Not about *uniformity*
  - Psychological diversity, a valuable asset to society, brings about a wide variety of ideas, lifestyles, and attitudes.
    - Some cultures may view an issue as "just as a person is"; whereas other cultures may view it as a disorder
    - Ex: hearing voices could be a disorder, while in other cultures it is considered spiritual (they can communicate with the beyond)
- The mere presence or absence of symptoms does not determine if someone is 'mentally ill' or 'mentally healthy.'
  - Ex: depression, you cant always detect they aren't happy
  - Only sometimes can measure a physical symptom: with anxiety attacks can measure heart rate but can't physically measure hopelessness
- Determined on the basis of symptoms alone

Maslow's Hierarchy of Needs:



Source: Maslow, A. 1970. *Motivation and Personality,* 2nd ed. New York: Harper & Row.

- self actualization
- self esteem
- love and belongingness
    - friends, family, sexual
- safety and security
    - protected by others, knows how to avoid risks,

security

- physiological needs
    - food, water, shelter

- describes the ideal of mental health
- people wont be able to function well if they don't have basic needs
- if you don't have a house and its freezing outside, how can you win the Nobel prize if you can't even survive
- lowest level is animalistic needs
- second level: domestic violence doesn't have this level

<u>self actualization:</u>
people who have achieved this are:

- **realistic**: know difference between what's real and what they want
    - they can cope with things they cannot change and accept better evidence that contradicts their beliefs
- **acceptance**: psychologically healthy people accept themselves as they are. Requires positive, realistic self-concept.

- **Autonomous**: more than psychological independence; they are inner directed (find guidance from within) and have an internal locus of control
- **Authenticity**: they are not afraid to be themselves
- **Capacity for intimacy**: Can be physically and emotionally intimate
- **Creativity**: can continually look at the world with renewed appreciation

*over 72% of people report their mental health as being good or excellent

Characteristics of a Psychologically Healthy Individual

1) Feel comfortable about themselves; *experience the full range of human emotions but are not overcome by them*
    a. It's about the coping skills that we use to deal with our emotions rather then not feeling them
2) Interact well with others; *are able to give and receive love; have satisfying relationships*
3) Able to meet the demands of life; *respond appropriately to problems, accept responsibility, establish realistic goals*
4) Striking a balance in all aspects of your life
5) Resilience → the ability to recapture a sense of psychological wellness within a reasonable time after encountering a difficult situation

TABLE 2.1

Erikson's Stages of Development

Age	Conflict	Important People	Task
Birth–1 year	Trust vs. mistrust	Mother or other primary caregiver	In being fed and comforted, developing the trust that others will respond to your needs
1–3 years	Autonomy vs. shame and self-doubt	Parents	In toilet training, locomotion, and exploration, learning self-control without losing the capacity for assertiveness
3–6 years	Initiative vs. guilt	Family	In playful talking and locomotion, developing a conscience (based on parental prohibitions) that is not too inhibiting
6–12 years	Industry vs. inferiority	Neighbourhood and school	In school and playing with peers, learning the value of accomplishment and perseverance without feeling inadequate
Adolescence	Identity vs. identity confusion	Peers	Developing a stable sense of who you are—your needs, abilities, interpersonal style, and values
Young adulthood	Intimacy vs. isolation	Close friends, sex partners	Learning to live and share intimately with others, often in sexual relationships
Middle adulthood	Generativity vs. self-absorption	Work associates, children, community	Doing things for others, including parenting and civic activities
Older adulthood	Integrity vs. despair	Humankind	Affirming the value of life and its ideals

Source: Erikson, E. 1963. *Childhood and Society*. New York: Norton.

- psychological health starts at birth
- at each stage of our lives we have tasks and as we master it we move onto the next level of developmental tasks

- if failing to master a task, may prevent us later on/ hold us back or give us an identity crisis later on

- STAGE 1: TRUST V.S MISTRUST: babies are cute and have big eyes to make sure that you nurture them and attend to them because they need this on a basic level in order to survive
    - even ONE person to care and nurture for that baby is enough
    - if we don't attend to their needs it cou
    - ld impair them trusting people
- STAGE 2: AUTONOMY VS SHAME kids tend to lash out at this stage and throw temper tantrums when they are frustrating and trying to do things themselves
    - Try not to punish kids
- STAGE 3: INITIATOVE VS. GUILT try to get kids to do things themselves
    - Ex: kids should tie their own shoes themselves even if it takes longer rather than parents do everything for them
    - Helicopter parents are bad because it sends the message that the child cant do anything and the kid no longer has motivation to do anything
- STAGE 4: INDUSTRY VS INFERIORITY fostering kids sense of value/work
    - Give children chores to show they have value
- STAGE 5: INDENTITY VS CONFUSION developing sense of self for themselves, free will, don't listen to anyone
    - Many times conflict, disagree with what have been taught
- STAGE 6: INTIMACY VS ISOLATION "crisis of the twenties"
    - trying to find your way, career, finances
- STAGE 7: GENERATIBITY VS SELF ABSORBSION you have a sense of who you are and what your good at,
    - Must have to now learn how to be a parent
    - May have to look after elderly relatives as well
- STAGE 8: INTERGRITY VS DESPAIR existential crisis
    - mortality
    - if you look back at your life do you feel like your happy with your life
    - have you amounted to what you wanted?
    - do you have a legacy to leave?
    - Those who aren't satisfied may be depressed or suicidal
        - Has to do with perspectives

Developing an Adult Identity:

- Developing a unified sense of self, characterized by attitudes, beliefs, and ways of acting that's are genuinely your own
- Revolves around the choices we make and our interactions with the world
- Early identities are modeled after our parents
    - As we grow up tend to rebel against them
    - Rarely permanent

- Developing this is part of psychological wellness, and without one you could have an identity crisis

Developing intimacy:

- People with established identities can be intimate characterized by sharing, communication, commitment, and love
- Those who lack identity can be overwhelmed by this closeness

Developing purpose in life:

- Creating values for ourselves
    - Values judges what's good and bad; moral decisions
- Without values we could be driven by immediate desires
- Living by values means:
    - Considering options before acting
    - Choosing between options without succumbing to outside pressures
    - Making choices and acting rather than doing nothing

Striving for spiritual Wellness:

- Associated with greater coping skills
- Hypothesis why spirituality improves wellness:
    - Social support- attending services, feeling part of something
    - Healthy habits- some cultures eat certain diets that are healthier
    - Positive attitude- give people sense of meaning in life
    - moments of relaxation

Developing a Positive Self- Concept:

- begins at childhood
- if they feel rejected, could lose their self worth

Self concept:

- Self worth
    - People around us give us love and nurture us
- Integration
    - When we believe it ourselves, that we are worth something
- Stability
    - Even in the face if circumstances change, a person believes they have self worth and self beauty
    - Consistent image of themselves, not view themselves as entirely good one day and entirely bad the next

Meeting Challenging self-esteem:

- When failing at something, best approach is to acknowledge that something has gone wrong and try again, without putting blame on yourself or altering self-concept.

- Also avoid putting blame on others
- Worst response: lasting negative self concept
    - Notice pattern of thinking: recognize negative thoughts and assumptions, note when they happen
    - Avoid focusing on the negative: make sure you aren't jumping to conclusions, you're being reasonable, and you avoid personalizing the situation
- Develop realistic self talk:

Being less defensive:

- Sometimes if we can't resolve a conflict externally we try to resolve it internally and we create defense mechanisms to cope, but these only last temporarily and are not long term fixes

Being Optimistic:

- If we are pessimistic we expect failure

Maintaining Honest communication:

- sometimes were frustrated we cant convey what we want to

Dealing with loneliness:

- need balance of alone time and with people
- loneliness can result from FOMO, being rejected, from a missing person in your life

Dealing with anger:

- hostile people at greater risks of heart attacks
- angry words and actions don't improve wellness
- can damage relationships
- need some anger so you will express feelings even If someone can get hurt
- sometimes anger is misdirected
    - IED: intermitted explosive disorder➔ like a child's tantrum, bursts of temporary anger, explosive
- Managing your anger: distract yourself (count to 10), reframe what your thinking
- Managing others anger: anger is infectious, but deal with angry people in calm ways, validate the person

Anxiety Disorders

- Anxiety is another word for **fear,** especially a feeling of fear that is not in response to any definite threat.
- When fear is disproportionate to the actual danger, it can be considered a problem.
    - or when its drowning out background noise, its all you hear
- Anxiety disorders are the **most common of psychological disorders** among Canadians.
- When we don't know how to react and the default is to panic

*12% of Canadians have an anxiety disorder

Types of anxiety disorders

- Phobias – Simple & Social
  - Babies instinctively know how to respond to scary things such as snakes
  - Some phobias aren't bad, were pre wired to fear some things phobias aren't bad, were pre wired to fear some t
  - Social phobia: shyness, fear of public speaking, stems from how we will appear, our self esteem
- Panic – sudden & situational
  - Panic: something's not right, may stem from stimulus or comes out of nowhere
- Generalized Anxiety Disorder (GAD)
  - not about anything in specific, just baseline anxiety, always worried bad things will happen, feel like no control over situation
- Obsessive – Compulsive Disorder (OCD)
  - Obsessions=thoughts
- Compulsions= actions you HAVE to do , think something bad will happen if you don't
  - • OCD thoughts running through mind all the time, both consciously and unconsciously
- Behavioural Addictions
  - Ex: gambling alcohol
  - Comes from a place of feeling uneased. Use behaviours to make up for it
- Post-traumatic Stress Disorder (PTSD)
  - a traumatic event happened or small traumas that build up. Feels like trauma is happening again. (Flashbacks, nightmares). Time is distorted.

Mood disorders:

- Depression- feeling low
- Mania- disproportional high
- Bipolar Disorder
- Dysthmic Depression – depression of at least 2 years

Depression looks like:

- A feeling of sadness and hopelessness
- Loss of pleasure in doing usual activities
- Poor appetite/ weight loss
- Insomnia/disturbed sleep
- restlessness or fatigue
- Thoughts of worthlessness and guilt
- Trouble concentrating or making decisions
- Thoughts of death or suicide

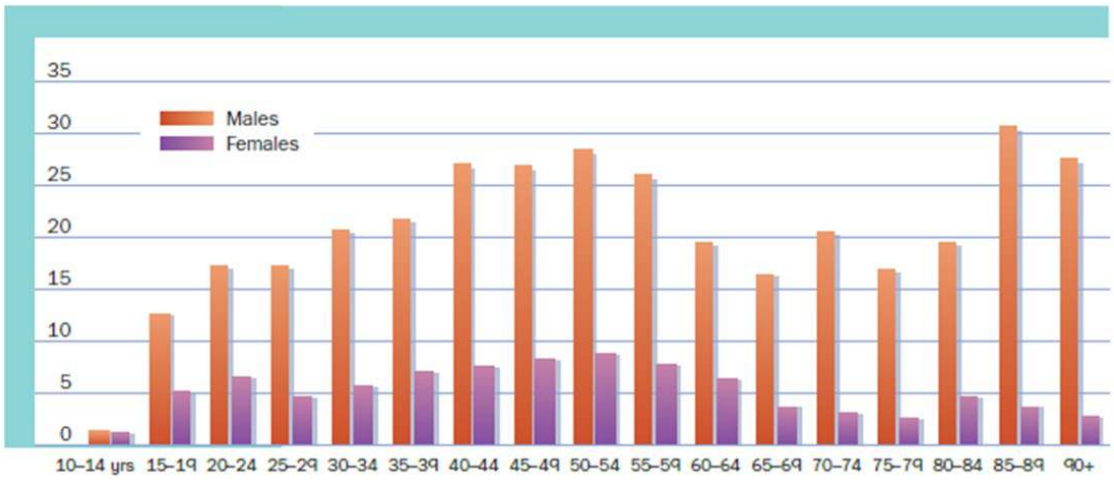
affecting your day to day function

• Unintentional weight loss
• Sometimes sleep too much

- Nothing is giving joy or satisfaction
    - • May be due to thyroid conditions

FIGURE 2.2

Rates of Suicide, by Sex and Age, per 100 000 Population



Source: Adapted from Statistics Canada, CANSIM, table 102-0551, last modified: 2012-05-31, http://www.statcan.gc.ca/tables-tableaux/sum-som/l01/cst01/hlth66f-eng.htm (retrieved January 20, 2015).

- Orange: males
- Pink: females
- Males are more SUCCESSFUL at suicide, NOT males are a risk factor of being suicidal
- Most males tend to make violent and lethal actions and also don't warn people
- Peaks at 85 for males probably because they can't handle pain and illness at old age. Lack of access to palliative care
- Scale starts at 10: assumption that kids don't have mental health issues, we assume it's behavioural issues. FAULTY ASSUMPTION
- Second leading cause of death among youth
- 14% reported having suicidal thoughts at some point in their lives; 6% in past 12 months
- 3.5% had attempted suicide
- Young woman attempt suicide about 3x more often than young men, but males are 4x more likely to die from suicide
- Most suicidal individuals have depressive disorders and feel helpless and powerless over their lives

Warning signs of suicide:

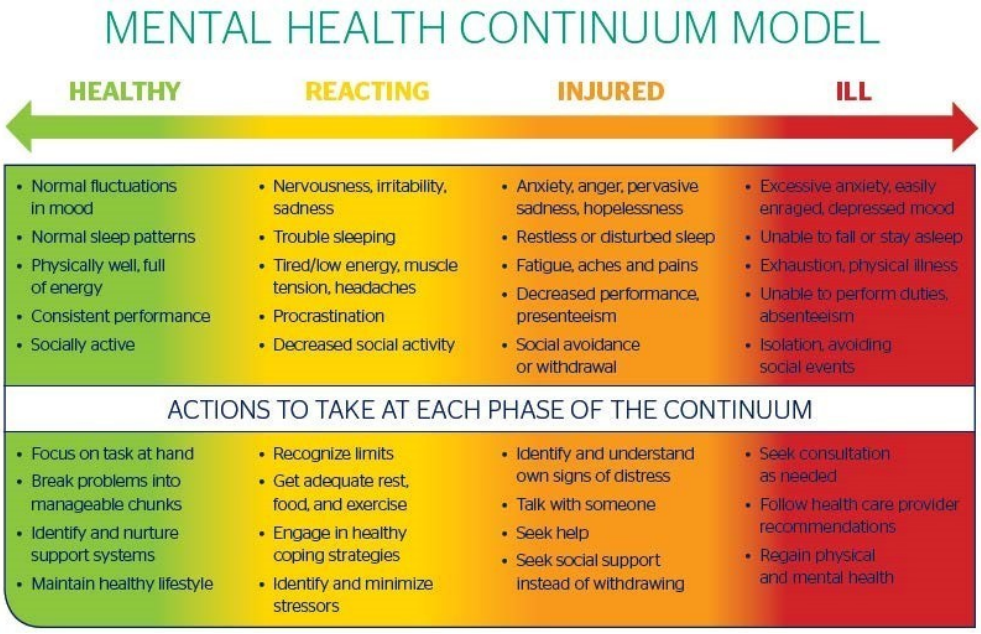
* Everyone knows at least someone within 6 degrees of separation who is suicidal
    - Expressing the wish to be dead
    - Increasing social withdrawal/isolation
    - Sudden inexplicable lightening of mood
        - why? Because once they've committed to the plan, they've come to peace with it and they are happy they are ending their lives
    - History of previous attempts
    - Suicide by a family member or friend➔ risk factor
    - Readily available means of committing suicide
    - History of substance abuse or eating disorders
    - Serious medical problems

Get immediate Help:

- Thoughts/ Intention to kill self
- Plan (even vague)
- Means (or ability to do so)
- Prior Attempts/ Thoughts
- Unwilling to get help
- Impulsive or unpredictable
- Under the influence **&** suicidal

<u>Who to Call for help:</u>

- Call 911
- Go to nearest Emergency Department
- Call crisis service
- Seek counselling



Maintaining psychological wellness:

Within yourself

- Notice how you think
- Avoid negative rumination
- Do realistic self-talk
- Take ownership
- Positive attitude
- Check your assumptions
- Healthy habits / relaxation

With others

- Social support
- Be present with others
- Invite constructive feedback
- Continue to love
- Practice Gratitude
- Don't withdraw
- Trust

ECT: Electroconvulsive therapy

- Seizures induced by electrical impulse and patients are given muscle relaxants and anesthetic.
- Reduces depression

Models of human nature and change:

Biological model:

- Minds activity depends entirely on an organic structure (the brain), whose structure is entirely genetically determined
- Genetic influences
- Neurons assist activity
    - Pharmacological therapy: these drugs cause side effects and may be a while before finding fitting drug
    1. Antidepressants
    2. Mood stabilizers (prevent mood swings)
    3. Antipsychotics (reduce hallucinations)
    4. Anxiolytics (anxiety agents)
    5. Stimulants (ADHD)
    6. Anti-dementia

Behavioral model:

- Focuses on what people do rather than on brain structure/ chemistry

- Analyze behavior based on stimulus, response and reinforcement, and based on this can detect what reinforcement keeps an undesired behaviour
- To change this, they use exposure therapy

Cognitive model:

- Behaviours results from complex attitudes, expectations, motives, rather than simple reinfprcements
- emphasizes effect of ideas on behavior and feeling
- change the way people think
- treat by trying to expose and identify false ideas that produce negative feelings

psychodynamic model:

- patients speak freely and try to understand the basis of their feeling
- emphasizes thoughts (can't be changed directly as it is intertwined with multiple defense mechanisms and emotions), and how the past changes the present

*best way is to combine cognitive and behavioural model

- Typically emphasizes exposure as well as changing problematic patterns of thinking
- Typically involve ~10 individual or group sessions with a therapist plus homework
- Has been shown to produce significant improvements
- Has been combined with drug therapy for depression, anxiety disorders, and schizophrenia

**psychodynamic model is criticized because it is ineffective and endless
***should use combination of drug therapy and person therapy

Treating Depression:

- Most effective treatments for major depression are psychotherapy and antidepressant medications
- Depression is highly treatable
- Both treatments can be effective when used alone or in combination
- When talking about children, early intervention is important
- Contrasts with the heavy reliance on antidepressive medication alone favoured during the past decade
- Recovery within two years is not uncommon, although never assured
    - There are relapses and set backs however we do see many effective treatments
- Psychotherapy:
    - Typically, a form of cognitive-behavioural therapy (CBT) in which the person with depression learns how to recognize and deal with life situations in a constructive fashion
- Drug Therapy:
    - Involves one or more classes of antidepressive medications:
        - Selective serotonin reuptake inhibitors (SSRIs)
        - Serotonin/norepinephrine reuptake inhibitors (SNRIs)

        - Norepinephrine/dopamine reuptake inhibitors (NDRIs)
        - Noradrenergic and specific serotonergic antidepressants (NaSSAs)
        - Cylices
        - Monoamine oxidase (MAO) inhibitors
- Other Treatments for Depression
    - Physical activity
        - Endorphin levels and effects on brain chemistry and hormonal levels partly explain why this is a powerful antidote for depression
    - Electroconvulsive therapy (ECT)
        - Delivers an electric shock to the brain including a brief seizure; debated issue
            - Typically used when everything else fails
            - Will be given this 3 times a week for 4 weeks
            - Some side effects such as short term memory loss that comes with this therapy
    - Complimentary treatments (Ex: herbal, supplements such as St. John's wort)
        - Should be viewed with caution
        - Shouldn't be used on someone with severe depression

Definitions:
Psychological health: mental health, defined either negatively as the absence of illness or positively as the presence of wellness
Self-actualization: the highest level of growth in Maslow's hierarchy
Self-concept: The ideas, feelings, and perceptions people have about themselves; also called self-image
Self-esteem: satisfaction and confidence in yourself; the valuing of yourself as a person
Autonomy: independence; the sense of being self-directed
Inner-directed: guided by an inner set of rules and values
Other-directed: guided by the values and expectations of others
Authenticity: genuineness
Normality: the psychological characteristics attributed to the majority of people in a population at a given time
Identity crisis: internal confusion on who you are
Values: criteria for judging what is good and bad, which underlie a person's moral decisions and behavior
Cognitive distortions: patterns of negative thinking that make events seem worse than they are
Self-talk: The statements a person makes to him or herself
Defense mechanisms: mental devices for coping with conflict or anxiety
Assertiveness: expression that is confident and direct but not hostile
Anxiety: a feeling of fear that is not directed toward any definite threat

Simple (specific) phobia: a persistent and excessive fear of a specific object, activity, or situation
Social phobia: an excessive fear of being observed in public; speaking in public is the most common example
Panic disorder: a syndrome of severe anxiety attacks accompanied by physical symptoms
Agoraphobia: anxiety disorder characterized by fear of being alone, away from help, and avoidance of many places and situations; in extreme cases results in fear of leaving home
Generalized anxiety disorder (GAD): an anxiety disorder characterized by excessive, uncontrollable worry about all kinds of things and anxiety in many situations
OCD: uncontrollable, recurring thoughts and the performing of irrational rituals
Obsessions: recurrent, irrational, unwanted thoughts or impulses
Compulsions: irrational, repetitive, forced actions, usually associated with an obsession
Behavior addiction: an activity or a behavior that is maladaptive and persistent despite the negative consequences
PTSD: an anxiety disorder characterized by reliving traumatic events through dreams, flashbacks, and hallucinations
Mood disorder: An emotional disturbance that is intense and persistent enough to affect normal function; two common types are depression and bipolar
Depression: characterized by the loss of interest, sadness, hopelessness, loss of appetite, disturbed sleep, etc.
Electroconvulsive therapy: use of electric shock to induce brief generalized seizures; use this method to treat psychological disorders
SAD: mood disorder, seasonal depression with less daylight
Mania: excessive elation, irritability, talkativeness, inflated self esteem
Bipolar disorder: alternating periods of depression and mania
Schizophrenia: involves disturbance in thinking and in perceiving reality
Placebo: chemically inactive substance that a patient believes is active and effective. Patients react to it as though it was an active drug
ADHD: persistent problems with attention and hyperactivity, to a degree that is considered inappropriate for a person's developmental stage. Can result in difficulty in school, work and relations.
Stimulus: anything that causes a response
Response: reaction to stimulus
Reinforcement: increasing the future possibility of a response with a rewards
Exposure: therapeutic technique for treating fear in which a subject learns to cone into direct contact with a feared situation

Chapter 3

What is stress?

- Situations (triggers/ stressor) + reactions (our response) = Stress (state)
- Our responses are in our behavior, psychological, and physiological response
- The same event can affect 2 people differently

Stress:

- Top things university kids may be stressed about

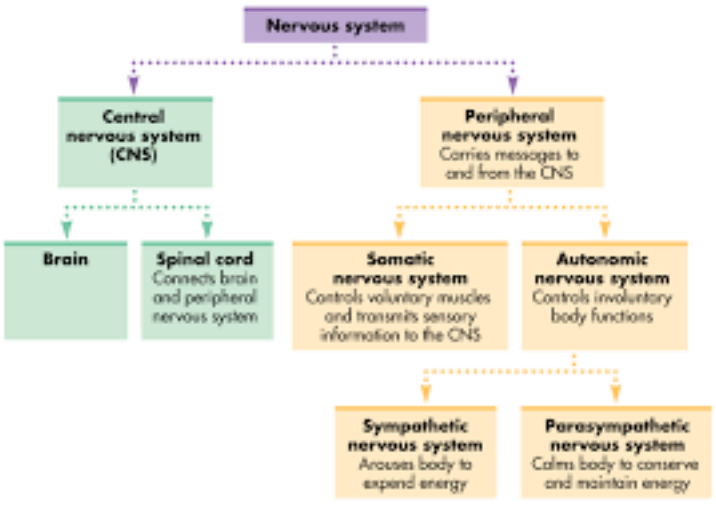
1. Work life balance
2. relationships
3. money
4. future
5. grades
6. housing
7. working/jobs
    - either finding one or feeling like your not appreciated/not reaching your potential
8. health
9. time pressures

Physical responses to stress:

- two systems are responsible for controlling the physical responses:
    - nervous system and endocrine system
- your body is primed to respond quickly and appropriately in times of danger

Nervous system:

- consists of the brain, spinal cord, and nerves.
- Some of nervous system in voluntary and some is involuntary
- Autonomic
    - Parasympathetic: is control when you are relaxed
    - Sympathetic: activated during arousal
        - Uses neurotransmitter norepinephrine, which causes arousal, to exert actions to enable your body to handle an emergency
        - Commands body to stop storing energy and use it to respond to crisis



Endocrine system:

- System of glands, tissues
- Helps control body functions by releasing hormones into bloodstream

The 2 systems together:

- Chemical messages and sympathetic nerves cause the release of key hormones including **cortisol and epinephrine.** These hormone trigger:
    - Heart rate to increase
    - Hearing and vision decrease
    - Liver releases extra sugar to boost energy
    - Perspiration increases to cool the skin
    - Brain releases endorphins that block the sensation of pain
- These changes are called the "fight or flight" reactions

Return to homeostasis:

- Once the stressful situation ends, the parasympathetic division takes over
- Restores homeostasis: slows heart rate back to normal, digestion and temperature regular
- This feeling has evolutionary importance, but Today its often inappropriate reactions. Many of the stressors do not require a physical response

Types of stress

- Eustress
    - Opposite of distress. Can be good stress.
    - Ex: feeling some test anxiety is a good thing as it motivates us to study and motivates us
    - Too much causes distress and that's a bad thing
- Acute stress
    - Short, intensity can very
- Episodic acute stress
    - Short lived moments of stress come up more frequently, comes up in day to day life
- Chronic Stress
    - Stress is prolonged and wont go away
    - Ex: stressful job but you stay because you need the money but your constantly stressed
    - Ex: toxic relationships where people constantly put you down
- Burnout
    - Happens when there prolonged chronic INTENSE stress
    - Burnout is different because you can no longer produce a response to the stress

How our body responds to stress?

- Stage 1: stimuli from one or more of the 5 senses are being sent to the brain
- Stage 2: the brain deciphers the stimulus as either a threat or non-threat
- Stage 3: body stays activated or aroused until the threat is over
- Stage 4: the body returns to homeostasis, a stage of physiological calmness, once the threat is gone

*stage 1 is acute
*Stress stems as a result of evolution. It has made us more fit
* we rely now on our cognition to make sense of triggers to see if we still need to be stressed, once the situation passes but the feeling lingers
*if were more stressed and drive our body harder, that will have a wear and tear affect on our body➔ allosteric load (ex: like overdriving a car)
- Allostatic load: a measure of how much stress affects us. Allows us to predict out health in the future➔ higher load= poorer health

Burnout: Too much, too long

- Prolonged chronic
- "dry well/empty bucket"
    - try pouring water from an empty cup. You need to do something but there's nothing there
- marked by mental, physical and emotional
- bleak outlook
- chronic fatigue
- depersonalization
    - you've lost who you are
- low personal achievement

*failure is not the same as burnout. Some of the most successful people have had burnout
*you can have many burnouts throughout your life, but it is also possible to recover fully

12 stages of burnout:

1. compulsion to prove oneself, excessive ambition
2. push to work harder
3. neglecting personal needs
4. displacement of conflict
5. revision of value system, self-worth based on job
    a. you become the lowest priority in your life
6. denial of problem, believe others are lazy
7. withdrawal from social situations
8. obvious behavior changes noticed by others
9. loss of contact with self
10. inner emptiness sets in
11. depression sets in
12. burnout syndrome (mental or physical collapse)

*burnout is hard to detect because in the early stages your working harder and seem like you've got everything under control

Sympathetic Nervous system: fight or flight
Parasympathetic nervous system: relaxed

Cognitive:

- cognitive mental assessment
  - how you view the situation can determine if it will make you stressed
  - ex: viewing it as a challenge vs. viewing it as impossible
- successful prediction
  - managing time and allowing yourself to prepare
- perception of control
  - believing you are in control
- highly individual and strongly related to emotions

Emotional responses:

- can be determined by personality but also how can moderate and learn how to control them

Behavioral responses

- controlled by somatic system
  - manages the conscious actions
- adaptive/effective
  - helpful
- maladaptive
  - non-helpful➔ ex: drinking away problems
- biofeedback
  - a way of teaching our body how to relax.

Personality and Stress:

- affects how people perceive and react to stressors
- TYPE A- ultracompetitive, controlling impatient, aggressive
  - Higher stress and more problems coping with stress
  - Increase risk of heart disease
- TYPE B- relaxed and contemplative
  - Less frustrated by daily annoyances
- TYPE C- anger suppression, difficulty expressive emotion, exaggerated response to minor stressors
  - Impaired immune function
- TYPE D- feel but not express negative emotions. May avoid social interactions
  - Risk for heart problems
- Expressing emotion is beneficial and not expressing is problematic; but exaggerated responses are also unhealthy

- **Hardiness**➔ form of optimism. View potential stressors as challenges and opportunities to learn and grow.
    - Have sense of purpose and inner locus of control
    - Less stressed
- **Resilience**➔ people with social academic success in at risk populations (ex: low income, or mental or physical disability)
    - Associated with emotional intelligence
    - 3 types of resilience:
        - non-reactive resilience: person does not react to stressor
        - homeostatic resilience: may react strongly but returns to baseline quickly
        - positive growth resilience: person learns and grows from stress
- *can change your personality, but can change behavior patterns

Cultural background:

- clashing of cultures could be source of stress
- reaction to stress is influenced by family and cultural background

Gender:

- gender roles (what we are expected to do) affects our stress; ex: males are "supposed" to cry in public and that could be stressful for them
- women are more likely to balance multiple roles
    - 64% of women make all the family decisions about health care
- Men tend to feel like they need to be in charge at all times; which may impair their relationships and make them feel like its their responsibility to support the family
- Women are more likely to report more high work stress, and tend to cope with stress in unhealthy ways
- Levels of testosterone make men have higher blood pressure increasing their chance for heart failure.
    - Amygdala is sensitive to testosterone and that is why men are more likely to to find a situation stressful
    - Women have higher levels of oxytocin (mood regulator) and are more likely to seek support

Experience:

- Past experiences influence the evaluation of a potential stressor

*the more intense an emotional response is, the stronger the physical response will be

- To avoid this try:
    - Build meaningful relationships
    - Contributing to family
    - Build life skills➔ decision making, conflict management
    - Avoid urge to control everything
    - Trust others
    - Set high expectations while attaining fair boundaries

Stress and health:

- 23% of Canadians report most days are stressful
- stress can increase vulnerability

    - increase of colds during exam periods
- General Adaptation Syndromes (GAS)
    - Universal and predictable response pattern
    - Stress triggered by pleasant stressor is eustress
    - Unpleasant is distress
    - Stages:
        - Alarm: fight or flight feeling, most susceptible to disease or injury
        - Resistance: body develops new level of homeostasis
        - Exhaustion: if the stressor persists, your body runs out of energy to keep up; can be life threatening

Allostatic load:

- Long term wear and tear of body
- High allosteric load could be due to frequent stressor, poor adaptation to common stressor, inability to shut down stress response
    - Linked with hear disease, obesity, reduced brain and immune function
- When allosteric load exceeds your ability to cope, you are more likely to get sick

Psychoneuroimmunology:

- Immune system is flexible and is capable of substantial change without compromising health
- Increased levels of cortisol is linked to decrease number of immune system cells called lymphocytes
- Neuropeptides translate stressful emotions into biochemical events, providing a physical link between immune systems and emotions
- During acute stress: white blood cell moves into skin and enhance immune response
- Personal trauma: no immune affect
- Chronic stress negative affect on all aspects of immune system
    - Prolonged secretion of cortisol and may accelerate disease and inflammation
- Mood, personality, and behavior and immune system are all intertwines

Links between stress and specific conditions:

- Short term: cold, stiff neck
- Long term: accelerating aging, heart disease, high blood pressure, impaired immune system
- Cardiovascular Disease: heart rate increases and blood cells constrict, blood cells become damaged and covered in fat
- If your stressed you have elevated cholesterol which increases inflammation
- Psychological problems: stress activates PKC which influences the brains frontal cortex. If there is too much PKC, lead to bad judgements, can't focus, and can't think clearly. Can also contribute to depression, panic attacks, anxiety, etc.
- The brain's plasticity has the ability to physically change its structure and function in response to experience. (allows brain to be altered by stress)
    - Acute stress can alter learning
    - Moderate stress enhances ability to learn

    - Affects of stress are apparent in hippocampus, which involves learning and memory
- Other health problems:
    - Digestion problems
    - Headaches/ migraines
        - Most are tension headaches: dull, steady pain
        - 17% of Canadians have migraines: progressive pain that doesn't ease for several minutes to days
        - cluster headaches: extremely severe headaches concentrated around one eye
    - Insomnia
    - Menstrual irregularities
    - Loss of interest

***if you grew up in a stressful household, you may respond behaviorally**
reactions come from personalities and coping mechanisms

stressors

- Biological
    - Not eating or sleeping well
- Cognitive
- Behavioural
- Social
    - With media, personal connection is lost
    - People only post the good things on Facebook which can put us down
- Environmental
    - Natural disasters
    - Acts of violence (ex: on a campus)
- Life change
- Daily hassles
- Internal
    - We pressure ourselves to reach goals, unrealistic expectations

Personalized stress management plan

- What's stressing you out?
- What have your tried?
- What do you need immediately? → later?

Managing stress:

- social support
- communication
- exercise
- good nutrition (good to avoid caffeine)
- lots of sleep

How sleep works

- during NREM sleep:
  - blood pressure drops
  - respiration slows down
  - body temperature declines
  - growth hormone released
- stress hormones peak early in the morning and decreases throughout the day. Peak in the final stages of sleep
  - low during non-REM and increase during REM
- lack of sleep makes the concentration of stress hormones higher than usual and you can feel totally exhausted
- lack of sleep leads to your mental and physical processes deteriorate
  - prone to forgetfulness, headaches, irritability
- Sleep problems:
  - Insomnia
  - Sleep apnea

Time management:

- Budget your time
- Break up long term into short term goals
- Keep track of tasks you put off
- Visualize your achievement of the goal
- Consider doing least favourite task first
- Kill 2 birds with 1 stone
- Give yourself a break
- Avoid time sinks/wasters

Cognitive techniques:

- Take control
- Problem solve
- Modify expectations
- Stay positive
- Cultivate your sense of humor
- Focus on what's important

Relaxation techniques:

- Visualization
- Meditation
- Deep breathing
- Yoga
- Tai chi
- Listen to music
- Biofeedback

Counterproductive responses:

- Tabaco use
- Alcohol or drugs
- *12% of Canadian university students experience tremendous stress and over 36% have harmful drinking habits
- unhealthy eating habits

Definitions:
Stressor: any physical or psychological event or condition that produces stress
Stress response: the physical and emotional change associated with stress
Stress: the general physiological and emotional state that accompanies the stress response
Automatic nervous system: The branch of the nervous system that controls basic body processes; consists of sympathetic and parasympathetic divisions
Parasympathetic division: slows down heart rate, restore energy supplies (homeostasis)
Sympathetic division: reacts to danger (fight or flight), accelerates body processes
Norepinephrine: neurotransmitter released by nervous system onto specific tissues to increase their function during activity (ex: when secreted to brain, causes arousal
Endocrine system: System of glands, tissues, and cells that secrete hormones into the bloodstream to influence metabolism and other body processes
Hormones: chemical messengers produced in the body and transported in the bloodstream to target cells/organs
Cortisol: steroid hormone secreted by cortex (outer layer) of adrenal gland
Epinephrine: hormone secreted by medulla that affects functioning of organs involved in responding to stressor (a.k.a. adrenaline)
Flight or fight reaction: defense reaction that prepares an individual for conflict by triggering hormonal, cardiovascular, metabolic, and other changes
Homeostasis: state of stability and consistency in an individual's physiological functioning
Somatic nervous system: the branch of the peripheral nervous system that governs motor functions and sensory info. , largely under conscious control
Personality: sum of behavioral, cognitive, and emotional tendencies
Gender role: a culturally expected pattern of behavior and attitudes determined by a persons sex
General adaptation syndrome (GAS): pattern of stress responses consisting of 3 stages: alarm, resistance, and exhaustion
Eustress: stress resulting from a pleasant stressor
Distress: stress resulting from an unpleasant stressor
Allostatic load: the long-term negative impact of the stress response on the body
Psychoneuroimmunology (PNI): the study of the interactions among the neurons, endocrine, and immune systems
Burnout: a state of physical, mental, and emotional exhaustion
REM sleep: portion of night where dreams occur
nonREM sleep: involves deep sleep, involves 4 stages of successively deeper sleeps
sleep deprivation: lack of sleep over time

insomnia: sleep problem involving inability to fall or stay asleep
insomnia syndrome: experiencing insomnia for at least 3 nights per week for a minimum of a month, and associated impairment or distress
sleep apnea: the interruption of normal breathing during sleep
relaxation response: physiological state characterized by a feeling of warmth and quiet mental alertness
visualization: a technique for promoting relaxation or improving performance that involves creating and recreating vivid mental pictures of a place or an experience; also called imagery
meditation: a technique for quieting the mind by focusing on a particular word, object (such as a candle flame), or process (such as breathing)
biofeedback: a technique in which monitoring devices help a person become conscious of unconscious body processes; such as temperature or blood pressure, to exert some control over them

Stress and Specific Conditions

Short-term:

- Colds and other infections, headaches, stiff neck, stomach-ache, allergies, etc.
- Three types of headaches:
  1. Tension Headaches
     - Characterized by a dull, steady pain, usually on both sides of the head

- May feel as though a band of pressure is tightening around your head, pain may also extend to your neck and shoulders
- Acute tension headaches can last from hours to days, chronic tension headaches may occur almost every day for months or even years
- Psychological stress, poor posture, and immobility are the leading causes of tension headaches
- No cure, but can often be relieved with over-the-counter pain killers, massages, acupuncture, relaxation, rest

2. Migraines
   - Progress through a series of stages lasting from several minutes to several days
   - Classical Migraine: those with aura
   - Common Migraine: those without aura
   - Aura itself usually lasts 20 minutes and comes right before the onset of the other symptoms
   - Prior to the aura, person can experience mood changes that can interfere with normal activities
   - Migraines can produce variety of symptoms; throbbing pain that starts on one side of the head and may spread, heightened sensitivity to light, visual disturbances (flashing lights), nausea, fatigue
   - Research suggest people who get migraines may have abnormally excitable nerve cells in their brain
   - When the nerve cells are triggered a wave of electrical activity is sent throughout the brain which causes migraine symptoms
3. Cluster Headaches
   - Extremely severe headaches that cause intense pain in and around one eye
   - Usually occur in clusters of one to three headaches each day over weeks or months
   - No known cause or cure

Long-term:

- Cardiovascular disease & High blood pressure
  - Certain types of emotions may increase a person's risk of CVD- people who tend to react to situations with anger and hostility are more likely to have heart attacks
  - Stress also linked to another risk factor for CVD- Elevated cholesterol = inflammation is a key component of the damage to blood vessels which leads to heart attacks. Stress increases inflammation throughout the body
  - Stress induced increases in inflammatory messenger molecules are also linked to elevated levels homocysteine and C-reactive protein (CRP), two compounds that appear to be markers for CVD risk. Stress related depression and anger are associated with elevated homocysteine levels & job related exhaustion is linked to high CRP levels in some people
  - During stress response, heart rate increases and blood vessels constrict, causing blood pressure to rise
  - Chronic high blood pressure = cause of atherosclerosis, disease in which blood vessels become damaged and caked with fatty deposits, deposits can then block arteries causing heart attacks and strokes, stress can precipitate a heart attack in someone with atherosclerosis, stress response can also cause stress cardiomyopathy (mimics heart attack but doesn't damage heart)
  - Clearly, stress reduction can improve cardiovascular health
- Impaired immune function
- Type 2 diabetes
  - High CRP levels have also been implicated in insulin resistance and the development of Diabetes, which is in turn a risk factor for CVD
- Cancer
- Psychological problems
  - Stress activates the enzyme PKC, which influences the brain's prefrontal cortex
  - Excess PKC can negatively affect focus, judgement and the ability to think clearly
  - Stress has been found to contribute to psychological problems such as depression, panic attacks, anxiety, eating disorders, and PTSD
  - Recent research suggests that PTSD symptoms may occur in some individuals who have not experienced a major trauma

The Dalai Lama

- Joined scientists to discuss how stress affects health

- Suggested that stress in life leads to negative emotions such as fear, jealousy, and anger, which turn into violence
- Believes world peace begins with inner peace, tolerance, and compassion

Managing Stress

- Shore up your support systems
- Improve communication skills
- Develop healthy exercise, eating and sleeping habits
- Learn to identify and moderate individual stressors

Social Support

- Ability to share fears, frustrations and joys
- Having the support of family members and friends seems to contribute to the well-being of body and mind
- University students living in overcrowded apartments with a strong social support system were less distressed by the cramped quarters rather than the loners with no social support
- Young adults who have strong relationships with their parents tend to cope with stress better than peers with poor parental relationships
- Married people live longer than single people (including those who are divorced, widowed, or never married) and have lower mortality rates from practically all causes of death
- Social Support can provide critical counterbalance to the stress in our lives

Communication

- Communicating in an assertive way that respects the rights of others, while protecting your own rights, can prevent potentially stressful situations from getting out of control

Exercise

- Helps maintain a healthy body and mind and even stimulates the birth of new brain cells
- Regular physical activity can also reduce many of the negative effects of stress
- Stress response mobilizes energy resources and readies the body for physical emergencies
- If you experience stress and do not physically exert yourself, you are not completing the energy cycle
- Exercise allows you to expend the nervous energy you have built up and trains your body to more readily achieve homeostasis following stressful situations
- People who exercise excessively risk overtraining; characterized by fatigue, irritability, depression and diminished athletic performance- can become one more stressor in a highly-stressed life

Nutrition

- Healthy diet gives you an energy bank to draw from whenever you experience stress
- Can enhance your feelings of self-control and self-esteem
- For managing stress, it is helpful to limit or avoid caffeine- mildly addictive stimulant that leaves some people jittery, irritable, and unable to sleep
- Consuming caffeine during stressful situations can raise blood pressure and increase levels of Cortisol
- Many people respond to stress by overeating or skipping meals or stop eating altogether- both responses are ineffective and are potentially unhealthy

Sleep

- Most adults need 7 to 9 hours of sleep every night to stay healthy and perform their best
- Getting enough sleep is not just good for you physically; adequate sleep also improves mood, fosters feelings of competence and self-worth, enhances mental functioning, and supports emotional functioning
- Sleep occurs in 2 phases: rapid eye movement (REM) sleep and non-rapid eye movement (NREM) sleep- sleeper goes through several cycles of both each night
- NREM sleep includes 4 stages of successfully deeper sleep- as you move through these stages of sleep, a variety of physiological changes occur, including:
  - Blood pressure dropping
  - Respiration and heart rate slows down
  - Body temperature declines
  - Growth hormone is released
  - Brain wave patterns become slow and even
- During REM sleep dreams occur and is characterized by the rapid movement of the eyes under closed eyelids

- Heart rate, blood pressure and breathing rate rise and brain activity increases to levels equal to or greater than those during waking hours
- Muscles in the limbs relax completely, resulting in temporary paralysis

Sleep and Stress

- Stress hormone levels in the bloodstream are related to sleep patterns
- Peak concentration occurs in the early morning- followed by a slow decline during the day and evening
- Stress hormone levels are low during non-REM sleep and increase during REM sleep

Changing Levels of Stress Hormones in the Bloodstream

- Lack of sleep has the greatest impact on stress
- Sleep deprivation causes the steady deterioration of mental and physical processes
- Sleep deprivation has also been associated with an increased risk of suicide (seen in studies done with university female students 2008 and adults in the military in 2012)
- Acute sleep deprivation slows the daytime decline in stress hormones- making evening levels higher than normal
- Decrease in total sleep time also causes an increase in stress hormone levels
- Extreme sleep deprivation can cause hallucinations and other psychotic symptoms, as well as to a significant increase in heart attack risk

Sleep Problems

- Woman have a harder time falling asleep and staying up
- Many Canadians have chronic sleep disorders- medical conditions that prevent them from sleeping well
- A condition called insomnia is where a person trouble falling asleep or staying asleep
- Insomnia syndrome is where there is sleep difficulty at least 3 nights a week for one month or longer and there is distress and/or functional impairment as a result
- Woman are more likely than men to meet the criteria for insomnia syndrome
- Most common causes of insomnia are lifestyle factors (such as high caffeine or alcohol intake before bedtime), medical problems (breathing disorder) and stress
- Sleep Apnea: person stops breathing while asleep- Typically results when the soft tissue at the back of the mouth collapses during sleep, blocking the airway (treatments: medications, apparatus for breathing, and surgery)

Time Management

- Important element in a wellness program
- Strategies for time management include: set priorities, schedule tasks for peak efficiency, set realistic goals and write them down, budget your time, break up long term goals into short term ones, visualize the achievement of your goals, keep track of the tasks you put off, consider your least favorite tasks first, consolidate tasks when possible, identify quick transitional tasks, delegate responsibility, say no when necessary, give yourself a break, avoid personal time sinks, stop thinking or talking about what you're going to do and just do it

Confiding in yourself through writing

- Keeping a diary is analogous to confiding in others, except that you are confiding in yourself- form of coping with stress
- Key to journaling for the purpose of promoting health and well-being is to write about your emotional responses to stressful events

Cognitive techniques

- Some stressors arise in our own minds
- Ideas, beliefs, perceptions, and patterns of thinking can all add to our stress level
- Each of the following techniques can help change unhealthy thought patterns to ones that will help cope with stress:
    a. Think and Act Constructively: stand aside from a problem, consider the positive steps you can take to solve it, then carry them out- can prevent stressors from becoming negative events, may even turn them into positive experiences
    b. Take Control: concentrate on what is possible to control, and set realistic goals
    c. Problem Solve: when facing a problem, problem solve by:
        1. Define the problem
        2. Identify the causes of the problem
        3. Consider all solutions
        4. Weigh positive and negative consequences of each solution

5. Decide- choose a solution
6. List what you will need to act on your decision
7. Begin to carry out the list
8. Evaluate the outcome and revise approach if necessary

d. Modify your Expectations: the fewer expectations you have, the more you can live spontaneously and joyfully- more you expect from others, the more you will feel let down
e. Stay Positive: talk yourself up rather than down- change your inner dialogue
f. Cultivate your Sense of Humour: even a smile can produce changes in your autonomic nervous system that can lift your spirits. Laughter elevates your heart rate, aids digestion, eases pain, and triggers the release of endorphins in the brain. After laughing, blood pressure dips below normal and you are relaxed. Having the ability to laugh at yourself is effective when it comes to instantly relieving stress.
g. Focus on What's Important: organize important information- create a mental outline that allows you to trace your way from the most general category down to the most specific details

Relaxation techniques

- Relaxation response: physiological state characterized by a feeling of warmth and quiet mental alertness
- Opposite of fight or flight reaction
- Triggered by relaxation techniques- causes heart rate, breathing and metabolism to slow down, blood pressure and oxygen consumption decrease, blood flow to the brain increases and brain waves shift from alert beta rhythm to relaxed alpha rhythm
  a. *Progressive Relaxation*: tense and relax the muscles in your body, group by group, then when you consciously relax those muscles other systems get the message and ease up on the stress response - helps you become aware of the muscle tension that occurs when you're under stress
  b. *Visualization:* (also known as imagery) allows one to daydream without guilt- basically when you imagine yourself in a relaxing and calm environment and involve all your senses (imagine the sounds, smells, etc.)
  c. *Meditation*: hundreds of forms all over the world, way of telling the mind to be quiet for a while- removes you from both internal and external sources of stress.
  d. *Deep Breathing*: breathing pattern is closely tied to one's stress level. Slow breathing= relaxation whereas rapid, irregular breathing= stress response. You can learn to slow and quiet your breathing pattern. Main goal of breathing exercises is to change chest breathing to diaphragmatic (stomach) breathing (b/c diaphragmatic breathing is slower and deeper than chest breathing)
  e. *Yoga*: most commonly practiced form of yoga in Canada is Hatha which emphasizes physical balance and breathing control. Can induce the relaxation response and promote body awareness and flexibility.
  f. *Tai Chi*: Martial art that, in addition to self-defence, aims to bring the body into balance and harmony to promote health and spiritual growth
  g. *Listening to Music*: can influence pulse, blood pressure, and the electrical activity of muscles- listening to soothing music can lessen depression, anxiety, stress levels, and can lead to reduced levels of the stress hormone cortisol and causes changes in the electrical activity in the brain
  h. *Biofeedback*: helps reduce stress response by enabling a person to become more aware of their level of physiological arousal (electrical monitoring of the physiological stress response)- learn how relaxation feels, how to induce relaxation, and how to transfer this skill to daily life

Counterproductive Coping Strategies

a. Tobacco Use: the nicotine within cigarettes can make you feel relaxed and even increase your ability to concentrate but is highly addictive and those who smoke are more likely to experience frequent stress than non-smokers or ex-smokers (can also cause stroke, heart disease, lung cancer, and emphysema)
b. Use of Alcohol and Other Drugs: using alcohol to deal with stress places you at risk for all the short-term and long-term problems associated with alcohol abuse (also does nothing to address the actual causes of stress in your life).
c. Caffeine: raises cortisol levels and blood pressure and can make you feel more stressed
d. Marijuana: physiological show that marijuana use clearly doesn't cause relaxation- some neurochemicals in marijuana act to enhance the stress response
e. Opioids: can mimic the effect of your body's natural painkillers and act to reduce anxiety- tolerance to opioids develops quickly and many become dependant
f. Unhealthy Eating Habits: Nutrients in food provide you with energy and the substances needed to maintain your body. Eating is psychologically rewarding. Regular use of eating as a means of a coping with stress

may lead to unhealthy eating habits. Certain foods and supplements are thought to fight stress but excess consumption of any food is not considered healthy.

Creating a Personal Plan for Managing Stress

- No single strategy or program for managing stress will work for everyone
- Most important starting point for a successful management plan is to learn and listen to your body

Identifying Stressors

- Experts recommend keeping a journal
- Each time you feel or express a stress response, record both the time and the circumstances in your journal
- Note what you were doing, thinking and feeling at the time and the outcome of the response
- After a few weeks of journaling, you should be able to identify your key stressors and spot patterns in how you respond to them
- Allows you to be analytical about what produces the most stress in your life and fills in where your conscious memory fails you

Designing Your Plan

- Once you have identified the key stressors in your life, choose the stress reduction techniques that will work best for you and create an action plan for change
- Important to design rewards into your plan
- Evaluate your plan regularly and redesign it as your needs change
- Over time, your new stress-management skills will become almost automatic

Getting Help

- Learn more about specific areas you want to work on
- Peer counselling programs
- Support groups
- Short-term psychotherapy

Chapter 4

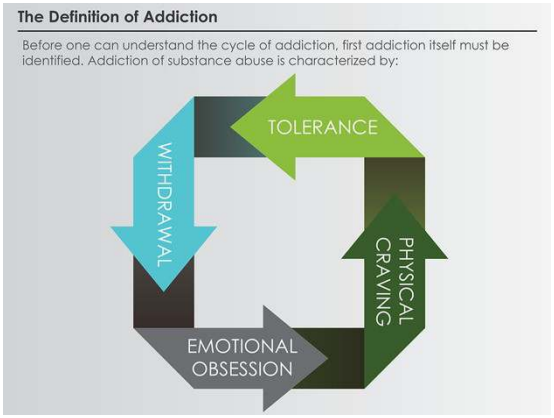
Where do we call things a problem and where do we draw the line?

We must ask ourselves:

- I Can choose
- I Can control
- I Can stop
- No loss
- What rewards
- Does it Change Me
- Is it change me
- Does it impact/define my life
- Do I feel a pull?
- obsessed
- Denial

What is addiction?

- Addiction is a chronic disease that disrupts the brain's system of motivation, reward, and memory
    - Characterized by a compulsive desire and increasing need for a substance or behaviour, and by harm to the individual and/or society



Addictive Behaviour: Addictive behaviours are habits that have _____, with resulting _____effects on a person's health.

Types of addictive behavior:

- Codependency
- Food and eating
- Gambling
- Sex
- Internet and games
- Debit
- Shopping
- Work
- Love

Costs:

- Relationships
- Financial difficulty
- Risky choices
- Problems with the law
- Obsession/compulsion
- Withdrawal
- Sacrifices

Addictive personality:

- Coping strategy
- Genetic predisposition
- Difficulty with Impulsive, Compulsive behaviors and self-regulation
- Risk taking
- Insecurity
- Forms co-dependent relationships
- Substitutes one "vice" or addiction for another

Who's at risk for developing an addiction?

- Psychological risk factors for addiction:
  - Difficulty in controlling impulses
  - Strong need for excitement, stimulation, immediate gratification
  - Feelings of rejection, hostility, aggression, anxiety, or depression
  - Mental illness (dual disorders)
- Social factors include family drug use, peer drug use, and living in poverty

Cycle of addiction:

- Using➔ guilt➔ emotional trigger➔ craving➔ ritural

Drugs:

- **Drugs** are chemicals other than food that are intended to affect the structure or function of the body
- A **psychoactive drug** is a drug which alters a person's experiences or consciousness and is most often associated with abuse and addiction
- **Intoxication** is a short-term state in which sometimes unpredictable physical and emotional changes occur

Drug and alcohol risks:

- Intoxication
- Unexpected side effects
- Unknown drug constituents
- Risks associated with injection drug use
- Legal consequences

Factors that influence a Alcohol/ drugs effect

- Pharmacological properties
- Dose-response function

- Time-action function
- Drug use history
- Method of use

FIGURE 14.3
Commonly Abused Drugs and their Effects

Category	Representative drugs	Street names	Appearance	Methods of use	Short-term effects
Opioids	Heroin	Dope, H, junk, brown sugar, smack	White/dark brown powder; dark tar or coal-like substance	Injected, smoked, snorted	Relief of anxiety and pain; euphoria; lethargy, apathy, drowsiness, confusion, inability to concentrate; nausea, constipation, respiratory depression
	Opium	Big O, black stuff, hop	Dark brown or black chunks	Swallowed, smoked	
	Morphine	M, Miss Emma, monkey, white stuff	White crystals, liquid solution	Injected, swallowed, smoked	
	Oxycodone, codeine, hydrocodone	Oxy, O.C., killer, Captain Cody, schoolboy, vike	Tablets, powder made from crushing tablets	Swallowed, injected, snorted	
Central nervous system depressants	Barbiturates	Barbs, reds, red birds, yellows, yellow jackets	Coloured capsules	Swallowed, injected	Reduced anxiety, mood changes, lowered inhibitions, impaired muscle coordination, reduced pulse rate, drowsiness, loss of consciousness, respiratory depression
	Benzodiazepines (e.g., Valium, Xanax, Rohypnol)	Candy, downers, tranks, roofies, forget-me pill	Tablets	Swallowed, injected	
	Methaqualone	Ludes, quad, quay	Tablets	Injected, swallowed	
	Gamma hydroxy butyrate (GHB)	G, Georgia home boy, grievous bodily harm	Clear liquid, white powder	Swallowed	
Central nervous system stimulants	Amphetamine, methamphetamine	Bennies, speed, black beauties, uppers, chalk, crank, crystal, ice, meth	Tablets, capsules, white powder, white crystals	Injected, swallowed, smoked, snorted	Increased heart rate, blood pressure, metabolism; increased mental alertness and energy; nervousness, insomnia, impulsive behaviour; reduced appetite
	Cocaine, crack cocaine	Blow, C, candy, coke, flake, rock, toot	White powder, beige pellets or rocks	Injected, smoked, snorted	
	Ritalin	JIF, MPH, Ritzell, Skippy	Tablets	Injected, swallowed, snorted	
Marijuana and other cannabis products	Marijuana	Dope, grass, joints, Mary Jane, reefer, skunk, weed	Dried leaves and stems	Smoked, swallowed	Euphoria, slowed thinking and reaction time, confusion, anxiety, impaired balance and coordination, increased heart rate
	Hashish	Hash, hemp, boom, gangstar	Dark, resin-like compound formed into rocks or blocks	Smoked, swallowed	
Hallucinogens	LSD	Acid, boomers, blotter, yellow sunshines	Blotter paper, liquid, gelatin tabs, pills	Swallowed, absorbed through mouth tissues	Altered states of perception and feeling; nausea; increased heart rate, blood pressure; delirium; impaired motor function; numbness, weakness
	Mescaline (peyote)	Buttons, cactus, mesc	Brown buttons, liquid	Swallowed, smoked	
	Psilocybin	Magic mushrooms, shrooms, mushies, fungus delight	Mushrooms, light to dark brown; available fresh, dried, or powdered	Swallowed (eaten raw or cooked, or steeped in hot water)	
	Ketamine	K, special K, cat valium, vitamin K	Clear liquid, white or beige powder	Injected, snorted, smoked	
	PCP	Angel dust, hog, love boat, peace pill	White to brown powder, tablets	Injected, swallowed, smoked, snorted	
	MDMA (ecstasy)	X, peace, clarity, Adam	Tablets	Swallowed	
Inhalants	Solvents, aerosols, nitrites, anaesthetics	Laughing gas, poppers, snappers, whippets	Household products, sprays, glues, paint thinner, petroleum products	Inhaled through nose or mouth	Stimulation, loss of inhibition, slurred speech, loss of motor coordination, loss of consciousness

Sources: Partnership for Drug-Free Kids. 2015. *Drug Guide for Parents: Learn the Facts to Keep Your Teen Safe.* http://www.drugfree.org/wp-content/uploads/2014/02/drug_chart.pdf (retrieved January 19, 2015); and U.S. Department of Justice Drug Enforcement Administration. 2011. *Drugs of abuse, 2011 edition: A DEA resource guide.* http://www.dea.gov/docs/drugs_of_abuse_2011.pdf (retrieved January 19, 2015).

1 drink…

FIGURE 15.1
One Drink of Various Alcoholic Beverages

341 mL = (12 oz.) beer* (5% alcohol)	142 mL = (5 oz.) wine (12% alcohol)	85 mL = (3 oz.) fortified wine** (16%–18% alcohol)	43 mL = (1.5 oz.) liquor (40% alcohol)

*Regular beers have an average alcohol content of 5%, but some have as much as 6% or 7%, making them stronger than a "standard" drink. "Light" beers have an average alcohol content of 4%.

**Such as sherry, port, or vermouth

Source: Centre for Addiction and Mental Health. 2012. *Alcohol.* http://www.camh.ca/en/hospital/health_information/a_z_mental_health_and_addiction_information/alcohol/Pages/alcohol.aspx (retrieved February 2, 2015).

- Rate of absorption is affected by many factors
  - Carbonation
  - Food in the stomach
  - Alcohol concentration
  - Eventually all alcohol ingested will be absorbed

Blood alcohol concentration

- Blood alcohol concentration, a measure of intoxication, is determined by the amount of alcohol consumed in a given amount of time. It is influenced by individual factors:
- such as body weight
- percentage body fat
- sex
- rate of alcohol metabolism due to genetic factors
- drinking behaviour.
- Food can slow the rate of alcohol absorption, the metabolic rate *cannot* be influenced by exercising, breathing deeply, eating, drinking coffee, or taking other drugs.

Drinking and Driving- How much is safe?

Mens B.A.L. Estimation Chart

Drinks	100	120	140	160	180	200	220	240	
0	.00	.00	.00	.00	.00	.00	.00	.00	Only Safe Driving Limit
1	.04	.03	.03	.02	.02	.02	.02	.02	
2	.08	.06	.05	.05	.04	.04	.03	.03	
3	.11	.09	.08	.07	.06	.06	.05	.05	Driving Skills Impared
4	.15	.12	.11	.09	.08	.08	.07	.06	
5	.19	.16	.13	.12	.11	.09	.09	.08	
6	.23	.19	.16	.14	.13	.11	.10	.09	
7	.26	.22	.19	.16	.15	.13	.12	.11	
8	.30	.25	.21	.19	.17	.15	.14	.13	Legally Intoxicated
9	.34	.28	.24	.21	.19	.17	.15	.14	
10	.38	.31	.27	.23	.21	.19	.17	.16	Possible Death

1 drink equals roughly 1 shot, 1 12oz. beer, or 1 5oz. glass wine.

Womens B.A.L. Estimation Chart

Drinks	100	120	140	160	180	200	220	240	
0	.00	.00	.00	.00	.00	.00	.00	.00	Only Safe Driving Limit
1	.05	.04	.03	.03	.03	.02	.02	.02	
2	.09	.08	.07	.06	.05	.05	.04	.04	
3	.14	.11	.10	.09	.08	.07	.06	.06	Driving Skills Impared
4	.18	.15	.13	.11	.10	.09	.08	.08	
5	.23	.19	.16	.14	.13	.11	.10	.09	
6	.27	.23	.19	.17	.15	.14	.12	.11	
7	.32	.27	.23	.20	.18	.16	.14	.13	Legally Intoxicated
8	.36	.30	.26	.23	.20	.18	.17	.15	
9	.41	.34	.29	.26	.23	.20	.19	.17	
10	.45	.38	.32	.28	.25	.23	.21	.19	Possible Death

1 drink equals roughly 1 shot, 1 12oz. beer, or 1 5oz. glass wine.

Body composition:

- Body can be divided into fat-free mass and body fat
    - Fat free= body's non-fat tissues: bone, muscle, connective tissue, organ tissues
    - 3 types of body fat:
        - subcutaneous
        - visceral
        - ectopic
- on kg of body fat = 7000 calories

- your weight isn't what's important, it's the proportion o your weight that's fat (percent body fat)

Energy balance:

- energy in vs. energy out
- energy id essential to maintain daily vital functions
- excess calories stored as fat

Evaluating body weight and composition

1) height- weight charts
    a. based on insurance company statistics
    b. list ideal range of weight based on sex, age and height
    c. easy to measure, but not that reliable
2) body mass index
    a. based on idea that body weight should be proportional to height
    b. doesn't distinguish fat and free fat weight
    c. fairly accurate for AVERAGE people
        i. not as accurate for athletes or short people
    d. not useful for tracking change in body composition
    e. ideal BMI is between 18.5 and 24.9
    f. about 25 is overweight
        i. 25-29.99 = pre obese
        ii. 30-34.99= obese class I
        iii. 35=39.99= obese class II
        iv. 40+= obese class III
        v. below 18.5= underweight
        vi. 17.5 or lower = eating disorder
3) Body composition Analysis
    a. No guideline for healthy body composition
    b. Ways to measure percent body fat:
        i. Hydrostatic (underwater) weighing and bod pod
            1. Weighed under water and calculate body density
        ii. Skinfold measurements
            1. Measures thickmess of fat under the skin. Taken at several sites and plugged into formulas
        iii. Circumference measurements
            1. Waist circumference and waist to hip ratio
        iv. Electrical impedance analysis
            1. Current sent through the body and it favors the fat free tissue path. Computer calculates this
        v. Scanning procedures
            1. Highly accurate, CT scans, MRI

Risks of excess body fat

- Obesity can increase mortality and reduce life expectancy by 10-20 years
- North Americans life expectancy will decline by 5 years

- Canadian children will have lower life expectancy than their parents for the first time
- Other risks: cancer, hypertension, cholesterol, heart problems, gallbladder, kidney and skin problems, diabetes

Diabetes:

Type 1:

- 300 000 Canadians have it
- the pancreas produces little or no insulin
- occurs when the body's immune system mistakenly attacks and destroys the insulin producing cells
- most commonly diagnosed between 10-14

Type 2:

- develop slowly
- 33% of individuals affected are unaware they have it
- onset usually at 40
- cells are resistant to insulin or doesn't produce enough insulin

Type 3:

- occurs in pregnant women
- usually disappears after pregnancy

- overall people with diabretes will probably die prematurely

Prevention:

- healthy lifestyle could prevent 90% of type 2 cases
- exercise makes cells more sensitive to insulin and helps stabilize blood sugar levels
- specific foods linked to diabetes: soft drinks, white bread, white rice, French fries, processed meats

Treatment:

- no cure, but can be managed with diet, exercise, mediation

symptoms:

- frequent urination
- extreme hunger or thirst
- unexplained weight loss
- extreme fatigue
- blurred vision
- frequent infections
- slow wound healing
- tingling or numbness in hands and feet
- dry, itchy skin

Body Fat distribution and health

- location of fat on the body is important as an indicator of health
- men and postmenopausal women store fat in upper regions of the body especially in abdominal area
- premenopausal women store fat in hips, butt, and thighs (pear shape)

- excess fat in abdominal area increases risk of high blood pressure, type 2 diabetes, heart disease, stroke, certain types of cancer, and mortality
- abdominal fat is more easily mobilized into the bloodstream
- abdominal fat is usually assessed using waist circumference
    - a total waist circumference of more than 88 cm for women or 102 cm for men, has a significant increase in health risk for disease.
- A person doesn't have to be necessarily overweight to have a fat distribution as a risk factor.

Body Image:

- Losing weight or getting cosmetic surgery does not necessarily improve body image, however improvement of body image may occur in absence of changes in weight or appearance
- Dealing with body image can improve eating disorders or obesity

Problems associated with very low levels of body fat:

- Extreme leanless has been linked with reproductive, circulatory, and immune system disorders
    - They may experience muscle wasting and fatigue
- For females involved in sports where appearance is important they may develop athlete triad: abnormal eating pattern, excessive exercising, followed by amenorrhea (loss of menstruation)
    - Amenorrhea can lead to decreased physical performance, increased risk of bone fractures, disturbance heart rhythm, and metabolism or even death

Factors contributing to excess body fat

- Genetics
    - 40-70 percent heritable
    - 600 associated with obesity
    - genetic factors affect the ease of gaining weight
    - if both parents are obese, child is 80% at risk of being obsess
    - if only one parent is obese, child is 40% at risk
- environmental
    - diet, exercise
    - tendency of obesity may be heritable, but the environment can affect it
        - genes are not destiny
- physiological factors
    - metabolism
        - energy required to process all of vital processes
        - RMR is about 70%
        - Energy to digest for is 10%
        - The rest is used for physical activity
        - behaviour and genetics affect this
        - higher proportion muscle= higher RMR (muscle is more active than fat)

        - when weight is lost, RMR and energy required to do tasks decrease (and vice versa)
        - exercise increase RMR (the number of calories consumed while at rest) and the muscle mass and well as burn calories in exercise itself
    - hormones
        - contributes to the amount and location of fat accumulation
            - ex: pregnancy and puberty
        - hormone leptin is secreted by body's fat cells and carried to the brain to know how big or small the fat stores are and the brain regulates the appetite and metabolic accordingly
        - many hormones are involved in regulating appetite
    - fat cells
        - number and size of fat cells
        - some people are born with above-average number of fat cells
        - overeating at critical times, such as in childhood and adolescence can cause the body to create more fat cells
        - if a person loses weight fat cells content is depleted
        - fat cells are not created equal
            - cells at the waist are more inflammatory and growth factors
        - **
- lifestyle factors
        - increased eating and decreased physical activity
    - eating
        - Canadians have access to plenty of calorie dense foods, and they are eating more than they should high fat and sugar foods
        - Canadians eat out more than they used to which means bigger food portions
        - People underestimate the calories they consume by an average of 30%
    - Physical activity
        - Activity levels are declining
        - Many schools have cut back on physical education
        - Only 7% of children are meeting national guidelines of 60 minutes per day
        - One study showed that 60% of the people who are overweight can be linked to TV watching
        - There are modern day conveniences that we have that don't require us to move
    - An obese environment
        - Environment promotes overconsumption of calories while at the same time discouraging exercise.

Overweight and obesity among Canadian Ethnic population

- Aboriginal and Canadians of Chinese and south Asian decent have higher than average rates of obesity- related chronic diseases
- Culturak factors influence dietary and exercise norms.

- Ex: acceptance of a larger size,
  - Black North Americans perciece themselves as skinnier than they really are while white North Americans perceive themselves as being bigger
- Rates of obesity tend to be higher for Canadian men than women
- Low socioeconomic= higher rates of obesity
  - Fewer opportunities to purchase good food
- Lowest obesity rates in BC and highest in rural and Atlantic provinces

Are Diet soft drinks bad for you?

- Drinking more than one day can lead to increased metabolic syndrome: a cluster of risk factors leading to type 2 diabetes
  - Some studies show that added sweeteners in soft drinks are linked to increased triglycerides in the blood, leading to a greater risk of heart disease.
  - Drinking more pop will lead to obesity and insulin resistance because:
    - The consumption of more calories in general
    - The high-fructose corn syrup content in soft drinks
    - Lower feelings of satiety (satisfaction)
    - The general effect of eating a diet that is high in refined carbohydrates, including sugar.
  - Studies show that by drinking one pop a day, even if it's diet, may increase the incidence of metabolic syndrome.
    - Researches found that the people who consumed this amount of pop were:
      - 44% as likely to develop metabolic syndrome
      - 37% as likely to be obese
      - 22% as likely to have hypertension (high blood pressure)
  - Some research has suggested that the artificial sweeteners in diet drinks make a person more prone to eating sweet, higher-calorie foods.
  - Another theory is that the caramel content in both regular and diet pops may play a role in insulin resistance.
  - Others say that studies show the benefit of diet pop in overweight individuals and suggest that other factors could explain the development of risk factors for heart disease.

Environmental factors:

- a noisy environment can lead to less sleep, which can lead to weight gain
- high poverty areas good food is too expensive
- in unsafe areas not get as much physical activity (not safe to walk outside)

Psychological factors:

- many people use food as a coping mechanism
- obesity is correlated with socioeconomic status: as socioeconomic goes up, obesity goes down.
- In some cultures, food is symbol of love and care

Diet and Eating Habits:

- Diet refers to your daily food choices and food restrictions
- One needs to develop a diet that is right for them and allows them to enjoy themselves
  - Total calories

- Daily energy intakes based on gender, age, activity level
- Best approach for weight loss is increasing exercise + restrictive calories (moderately)
-
- To maintain weight loss, you will probably have to maintain some degree of the calorie restriction you used to lose the weight.
- For most people, maintaining weight loss is more difficult than losing the weight.

- Portion sizes
  - Most people are unaware that restaurants and packaged foods have an increased portion size
  - The larger the meal, the greater underestimate of calories
  - To counteract this, weigh and measure out the food and check the serving size listed on packaged foods
  - Don't go overboard on snacks
- Energy (calorie) density
  - Its not the consumption of a certain number of calories that makes us feel full, rather the consumption of a certain weight of food
  - Foods that are low in density have more volume and bulk
  - Fresh fruits and vegetables, with their high water and fibre content, are low in energy density, as are whole-grain foods. Fresh fruits contain fewer calories and more fibre than fruit juices or drinks. Meat, ice cream, potato chips, croissants, crackers, cakes, and cookies are examples of foods high in energy density. Strategies for lowering the energy density of your diet include the following:
  - Eat fruit with breakfast and for dessert.
  - Add extra vegetables to sandwiches, casseroles, stir-fry dishes, pizza, pasta dishes, and fajitas.
  - Start meals with a bowl of broth-based soup; include a green salad or fruit salad.
  - Snack on fresh fruits and vegetables rather than crackers, chips, or other energy-dense snack foods.
- Eating Habits
  - Eating several small meals throughout the day
  - Skipping meals leads to excessive hunger and makes you vulnerable to binge eating or snacking
  - it is better to consume the majority of calories in the morning
  - say everything in moderation instead of decreeing food as being off limits
- physical activity and exercise
  - increasing physical activity tends to be easier than making significant cuts

on food intake
        - research has indicated that exercise does not automatically make you feel hungrier, and in some cases it actually suppresses appetite
    - Thinking and emotions
        - The way you think about yourself influences your actions.
        - People who have a weight problem often have bad self esteem and negative emotions
        - Our internal self talk can either motivate us or it could be negative and discourage us
- Exercise, body, and self-esteem
    - 82 adults completed a 12-week aerobic program and had 12 months of follow up. Along with their improved fitness levels, psychologically and moods also Improved compared to the control group
    - why?
        - People who exercise regularly gain a feeling of mastery that enhances their self esteem, they are more comfortable with their body,

Lifestyle strategies for weight management:

- Food choices:
    - Check food labels and portion sizes
    - Opt for low energy dense foods
    - Eat foods from each food group
    - Drink fewer calories
    - Watch for hidden calories
- Planning and serving:
    - Keep a log of what you eat
    - Eat 4 to 5 meals a day and snacks daily
    - When shopping make a list and stick to it; don't shop hungry
    - Consume majority of your foods during the day, not evening
    - Serve meals on small plates
    - Eat only in specific dining spots
    - Don't do anything else(ex: watch TV) while eating
    - Eat slowly
    - Avoid late night snacking
    - When your done eating, remove your plate
- Special occasions:

    - Choose a restaurant you can make healthy choices at
    - Send home leftovers with guests
    - Research has shown that people gain less than they think during the holidays (half a kg), but that weight isn't lost the rest of the year
- Physical activity and stress management:
    - Increase your level of physical activity
    - Begin a formal exercise program
    - Develop techniques for handling stress
    - Develop strategies for coping with non-hunger cues to eat
    - Ask family memebrs to be supportive to your change

<u>Doing it yourself</u>

- The right weight for you will naturally evolve, and you won't have to diet. Combine modest cuts in energy intake with exercise, and avoid very-low-calorie diets. (In general, a low-calorie diet should have 1500–1800 calories per day.)
- Don't try to lose weight more rapidly. Most low-calorie diets cause a rapid loss of body water at first. When this phase passes, weight loss slows. This causes people to give up not realizing that a reasonable weight loss is 8-10% of body weight over six months

Diet Books and Fad diets

- Many people who try try using diet books and results in rapid weight loss and often regained (some gain more than they lost)
- Reject books that:
    - Advocate an unbalanced way of eating, such as a carbohydrate-only diet or a low-carbohydrate, high-protein diet. Also reject books that promote a single food, such as cabbage or grapefruit.
    - That claim to be based on a "scientific breakthrough" or to have the "secret to success."
    - That promise quick weight loss, that limit the selection of foods, or that promise more than one kilogram of weight loss each week.
    - Etc.
- Accept books that:
    - Advocate a balanced approach to diet along with exercise and sound nutrition advice.

Is any diet best for weight loss?

- Low carb diets:
    - Can help with short term
    - Some advocate:
        - Fewer than 10% of total calories from carbohydrates

        - Daily intake below the 130 g needed to provide essential carbohydrates
        - Tend to be high in protein and sarurated fat, low in fible and whole grains
            - Diets known to increase heart disease, high blood pressure
- Low fat diets:
    - Can increase triglyceride levels and reduce levels of good cholesterol
    - Some blame this diet for high rates of obesity
        - Can be countered by exercise
- Low carb diets lost more weight in short term, but in long term there were no significant differences
- Most likely to keep off weight with regular exercise

Dietary supplements:

- It isn't an east way to lose weight
- Formula drinks and bars:
    - Use them instead of a meal
    - Difficult to use for long period of time because of muscle loss
    - Useful for rapid short term loss but weight usually gained back when change behaviours back to normal
- Herbal supplements:
    - Little info available on effectiveness, proper dosage, interactions with other drugs, etc.
    - Chinese herbal supplements caused 100 cases of kidney damage and cancer
    - Weight loss supplement similar to amphetamine increased panick attacks, seizures, raised blood pressure, strokes, especially when combined with other things like coffee
- Other supplements:
    - Dietary fibre acts as bulking agent in large intestine so it soesnt affect app
    - Labels such as "fat blockers" are misleading and may have negative results

Weight loss programs:

- non- commercial programs:
    - mainly provide support groups
    - don't advocate a particular diet, rather recommend seeking professional advice
    - ex: overeaters Anonymous
    - generally free
- commercial programs:
    - typically provide support groups, nutrition, exercise recommendations, etc.
    - safe and balanced diet featuring all food groups

    - emphasize physical activity
    - promote slow and steady weight loss of ¼-1 kg per week
    - physician should be consulted sometimes
    - include plans for weight maintenance when weight is off
    - ex: jenny Craig, weight watchers
- online weight loss program:
    - cross between self-help and online support groups
    - offer self-assessment
    - free or small charge
    - people tended to lose more weight this way
- Clinical weight-loss programs:
    - Located in hospitals
    - Severely obese people
    - Monitored very low calorie diet

Prescription drugs:

- Appetite suppressants➔ by increase kevels of brain chemicals that affect mood and appetite to make you feel full
- Have side effects that could be dangerous
- Prescription weight-loss drugs are recommended only in certain cases: for people who have been unable to lose weight with non-drug options and who have a BMI higher than 30 (or higher than 27 if two or more additional risk factors, such as diabetes and high blood pressure, are present).

Surgery

- Gastric bypass is recommended for those with BMI above 40
    - Modifies stomach size and decreases food intake
    - **Roux-en-Y gastric bypass**
        - Stomach is separated into two pouches, one large and one small. Small stomach pouch restricts food intake, and the bypass of the lower stomach and part of the small intestine resulting in absorption of fewer calories.
        - Symptoms:
            - Fat intolerance, nutritional deficiencies, etc.
    - **Vertical Banded Gastroplasty (VBG)**
        - In VBG, a small gastric pouch is created in the upper part of the stomach by applying a double row of staples that essentially elongates the esophagus. This small pouch empties into the remaining stomach through an outlet that is restricted with a band.
        - The procedure controls the gastric emptying of food and the volume of

foods eaten.
    - Common complications:
        - Nausea, vomiting, band slippage, etc.
    - When compared with Roux-en-Y gastric bypass, VBG has a lower initial weight loss and a greater weight regain.
    - There is also something called a Lap-Band which is similar to VGB and is generally considered to be safe. A band is placed laparoscopically via a tube through a small incision in the abdomen creating a small pouch in the stomach. The band is filled with saline and can be adjusted by adding or removing saline through a small tube that exists through the patient's abdomen.
    - Weight loss from surgery generally ranges between 40-70% of total body weight in a year.
    - Gastric banding surgery was much more effective in reducing weight and improving quality of life than non-surgical methods.
- Liposuction:
    - procedure which involves the removal of localized fat deposits
    - this cosmetic procedure does not improve health the way weight loss does, and it involved considerable pain and discomfort

Professional Help:

- Some obesity experts say how we eat and exercise can be symptoms of how we feel about ourselves. If we help people deal with their challenges in their lives, weight loss may follow.
- When concerned about body weight develops into an eating disorder, the help of a professional is recommended.

Body Image:

- Severe body image problems
    - Can cause significant psychological distress
    - A person can become preoccupied with a perceived defect in appearance, thereby damaging their self-esteem and interfering with relationships
    - At extreme, becomes body dismorphic disorder- usually begins at 18 years old
        - Overly concerned with physical appearances and focuses on slight flaws
        - May desire cosmetic treatment or may develop social phobia
        - Needs professional help
        - Could be results of eating disorders or body builders may have muscle dysmorphia

Acceptance and change

- There's a limit to how much we can change out body
- Important for wellness to know this and to not compare ourselves to unrealistic expectations

Gender, ethnicity, and body image

Gender:

- Women are more likely than men to be dissatisfied with their body image- often wanting to be thinner
- Only 30% of girls in grade 8 are content with their bodies while 70% of their male classmates are content
- Women more likely to develop eating disorders and diet
- Woen are more influenced by media
- 68% of women felt worst about their appearance after looking through a magazine
- 75% of normal weight women think they are overweight
- 90% women overestinmate their body size
- average model is 10-18 cm taller and 23 kg lighter than average woman

Ethnicity:

- in African societies full figured women are signs of health and fertility
- Black Canadians have a more positive body image than white Canadians

Avoiding Body image problems:

- Focus on healthy eating habits and good physical health
- Focus on psychological health
- Practice body acceptance
- Find things you appreciate about yourself; don't just focus on stuff you want to change
- Acknowledge beauty industry models as unrealistic

Eating disorders

- Disturbed body image, eating patterns and eating-related behaviours
- Many people may have abnormal eatig habits and patterns but do not meet criteria for a major eating disorder; but it does disrupt their lives
- Dissatisfaction with body created by distorted body image
- Hereditary factors play a role and account for 50% of the risk factor
- Home environment is a factor
    - Abuse and hostility increases risk
- Turning point in ife can affect developing an eating disorder

Anorexia nervosa:

- Does not eat enough food to maintain adequate, healthy body weight
- 1% of north americans have it; of which 95% are females
- relunctant to seek medical assistance
- have rituals or compulsions that keep them from eating
- may have interest in food even if they don't eat it
- may excessive exercise
- they may stop menstruating, be intolerant of the cold, develop low blood pressure and heart rate, develop dry skin that is often covered with fine hairs
- may develop wasted muscles, and then the body may feed on its own organs as a result

highest death rate among psychiatric disorders

20% of deaths are suicides

Bulimia Nervosa

- reccurent episodes of eating followed by purging

- may have normal weight, or weight flunctuations between 5-10 kg
- begins in adolescence
- 90% of cases are women
- may consume thoughsands of calories rapidly and feel as though they've lost control in secret
- health risks include: vomiting erodes enamel, damage to kidneys and liver, esopogus tearing and bleeding, cardiac arrhythmia, rupture of the stomach, menstural problems, increased depression

Bing eating disorder:

- uncontrollable eating until uncomfortably full and feeling of shame associated with it
- almost always obese
- eat their feeling
- health risks associated with obesity

borderline eating disorder:

- it's a continuum
- may have some symptoms but don't meet full diagnostic criteria
- know it's a problem when it dominates your life

Treating eating disorders:

- must address both problematic eating and misuse of food to manage stress and emotions
- for anorexia must first restore adequate body weight and then psychological aoects of the disorder can be addressed
- treatment of bulimia requires stabilizing eating patterns then identifying why the binge started in the first place
- anti-seizure medications has been proven to work to treat bulimia
- treatment involves psychotherapy and medical management
- support or self help groups

Weight management program

-motivating and commitment:

- think about why you want to change

- setting goals:
  - choose reasonable weight in the long term and a set of short term goals
- creating a negative energy balance
  - when your weight is constant you are burning same amount of calories as consuming. Must consume fewer calories to lose weight or you must burn more calories
- eat smart
- self monitoring:
  - kewp track of weight, exercise and what you eat
- put plan into action
  - examine environmental triggers
  - get others to help you
  - if you slip, get back on track immediately, don't self blame
  - dint get discouraged

- it is a lifelong project

Definitions:

Subcutaneous fat: The fat just beneath the skin; critical for normal body functioning
Visceral fat: The fat inside the abdominal wall and around he internal organs; an excess leads to greater risk of heart disease, insulin resistance, and metabolic syndrome
Ectopic fat: The fat located on or within organs, such as the liver, heart, and brain; increases the risk for metabolic syndrome
Percent body fat: The percentage of total body weight that is composed of fat
Overweight: body weight that falls above the recommended range for good health
Obesity: condition of having an excess of non-essential body fat; having a body mass index of 30 or greater or having a body fat percentage of greater than 25 for women and 33 for men
Body mass index (BMI): a measure of relative body weight that takes height into account and is highly correlated with more direct measures of body fat; calculated by dividing total body weight (in kg) by the square of the height (in meters)
Body image: The mental representation a person holds about his or her body at any given moment in time, consisting if perceptions, images, thoughts, attitudes, and emotions of the body
Female athlete triad: a condition consisting of 3 interrelated disorders: abnormal eating patterns and excessive exercising, followed by lack of menstrual periods and decreased bone density
Amenorrhea: the absence of menstruation
Resting metabolic rate (RMR): the energy required to maintain vital body functions, including respiration, heart rate, body temperature, and blood pressure, while the body is at rest
Eating disorder: a serious disturbance in eating patterns or eating related behaviour, characterized by negative body image and concerns about body weight and fat
Anorexia nervosa: an eating disorder where one refuses maintain body weight and intense fear of gaining weight. Starvation
Purge: use of vomiting, laxatives, excessive exercise, restricted dieting, diarrheic, or diet pills to compensate for food that has been eaten and that the person fears will produce weight gain
Bulimia nervosa: recurrent episodes of binge eating and purging- overeating and hen using compensatory behaviours, such as vomiting, laxative, etc. to avoid weight gain
Binge- eating disorder: binge eating and a lack of control over eating behaviour in general

Quick Stats

- Direct physical measurements gave found that about 34% of adult Canadians are overweight and 26% are obese
- In Canada, the direct and direct costs associated with overweight and obesity are estimated to reach $11 billion dollar annually
- Nearly 34% aboriginals are overweight while 35% fall within obese categories I/III and 5% fall into class III

- Obesity in children increased from 2% in 1981 to 9% in 2011. This means it tripled in one generation
- According to their BMI the proportion of children in Canada, classified as obese or overweight was 32%
- Canadians obtain more than 20% of their total daily calories from “other food”, which are not found in the 4 food groups
- In 2007-2009, approx. 1.5 million Canadians were considered eligible for bariatric surgery with a BMI of 40
- 2% of students felt their academic performance was affected negatively by an eating disorder
- 15-20% of Canadian women have many of the symptoms of an eating disorder

Chapter 5

Car analogy:

- Carbs= fuel for the tanks
- Protein= recovery and refuel
- Fruits and veggies= tune ups and maintenance
- Healthy fats= support for immune health and hormones. Fights inflammation

Top natural painkillers:

- Garlic: earache
- Cloves: toothache and gum inflammation
- Apple cider vinegar: heartburn
- Ginger: muscle pain
- Cherries: joint pain and headaches
- Turmeric: chronic pain

- Peppermint: sore muscles
- Pineapple: bloating
- Water: general injury pain
- Horseradish: sinus pain
- Blueberries: bladder infections

Problem eating:

- End up eating more than planned
- Keep eating when full / Eat to the point of feeling ill
- food restrictions/ cutting down
- go out of your way to obtain cravings
- Avoid or worry about eating in social situations
- Eating to change your mood/ psychological/ emotional

Body Image:

- Sense of identity
- Accurate
- Realistic
- Positive even about flaws
- Avoid quantification of self-worth
- causes _____
- Becoming _____ with a perceived defect in appearance
- damages _____
- interferes with _____
- _____
- Magnify flaws

Eating Disorders:

- **Heredity**

    - Accounts for more than ____of the risk
- **Home environment**
    - Hostility, abuse, lack of cohesion
    - Overprotective parent
    - Cultural messages
- **Turning points in life**
    - _____
    - _____

Treating Eating Disorders:

- Anorexia Nervosa
- Binge
- Bulimia
- Borderline Disordered eating
- Attend to the _____ First
- _____and nutrition
- Psychological aspects
- Identify/ change _____
- Improve coping skills
- _____/ _____

Nutritional requirements: components of a healthy lifestyle

- body requires proteins, fats, and carbs, vitamins, minerals, and 50 essential nutrients
    - essential nutrients: must get nutrients from food because your body is unable to produce it
- macronutrients
    - proteins, fats, and lipids
    - need in larger amounts
- micronutrients
    - vitamins and minerals
    - need in smaller amounts

Calories:

- person needs around 2000 calories a day to meet energy needs
- fat= 9 calories per gram
- protein = 4 calories per gram
- carbohydrate = 4 calories per gram
- alcohol has 7 calories per gram
- excess calories are converted to fats and stored in the body
- foods are classified by which of the macronutrients is most prevalent in that food

Eating habits to Total Wellness:

- eating right doesn't only help the body bit enhances life as it increases total wellness
- people who eat better are more satisfied with their lives, while people who overeat they feel guilty, angry, discouraged and out of control,

- there are some foods which affect out moods, such as women crave chocolate when they are depressed, and the chocolate may lift your mood by temporarily raising serotonin levels in the brain, which can improve moods
- fats in chocolate act as endorphins, chemicals that reduce pain and increase well-being feelings
- no correlation found between hyperactivity and sugary foods
- carb-rich foods like baked potatoes and bagels have calming effects
- for mental boosts, eat protein rich foods; it could increase the neurotransmitters thus increasing reaction time and alertness

Proteins:

- Important for body's structure muscles and bones
- Provide energy
- Also form parts of blood, enzymes, hormones, and cell membrane

Amino acids:

- Building blocks of proteins
- 20 common amino acids
    - 9 of which are essential

Complete and incomplete proteins:

- individual protein sources are complete if they supply all the essential amino acids in adequate amounts
    - ex: meat, fish, eggs, milk, cheese, soy
- incomplete if they do not provide this
    - ex: legumes, nuts
    - vegetable proteins such as wheat and peanuts make up for amino acids missing in other proteins. The <u>combination</u> is a complete protein
- vegetarians should include a variety of vegetable proteins to make sure they get all the essential amino acids in adequate amounts

Recommended Protein intake:

- 0.8 kg per gram of body weight
    - 50 grams of protein per day for someone who is 63 kg
- most Canadians exceed the protein intake needed
    - excess protein is stored as fat
    - very high protein can strain the kidneys
- protein intake should be between 10-35% of total daily calorie intake

Fats:

- most concentrated source of energy
- fats stored represent useable energy
- help insulate your body and cushion organs
- major fuel during rest and light activity

types and sources of fat:

- most fats are triglycerides
    - unsaturated, monounsaturated, polyunsaturated, or saturated
- fast foods are usually a mixture between unsaturated and saturated fats
- saturated usually solid at room temperature

    - usually found in red meats, cheese,
- mono and polyunsaturated are plant based and liquid at room temperature
- 2 fats, alpha-linolenic acid and linolenic acid are essential in regulating body functions such as blood pressure and progress of a healthy pregnancy

Hydrogenation:

- when unsaturated vegetable oils undergo the process of hydrogenation, a mixture of saturated and unsaturated fatty acids are produced creating a more solid fat from liquid oil.
- Changes some unsaturated fatty acids to trans fatty acids. It affects their chemical behaviour
- food manufacturers use this to increase the stability of an oil so it can be reused for for deep frying, improve texture of foods, and to extend shelf life
- leading sources of trans fatty acids are in processed food
    - the more solid (hard margarines) contain more trans and saturated fatty acids than softer
    - small amounts found in milk and cheese
- other plant oils also contain saturated fats
    - however fish oils and animal oils are high in polyunsaturated fats

Fats and Health:

- different types of fats have different affects on health
- saturated and trans fatty acids raise blood levels of low-density lipoproteins, or “bad cholesterol”, thereby raising risk of heart disease
- unsaturated lowers levels or LDL, but may increase high-density lipoproteins or “good cholesterol” and provide greater benefits for heart health.
- Saturated fats have been proven to decrease HDL and impair them to prevent the inflammation of blood cells, and may also prevent them to reduce the ability of the blood cells to react normally to stress
    - Therefore, for better health, choose unsaturated fatty acids
- On labels, trans fats may be written as partially hydrogenated oils of vegetable shortening
- Best way to reduce consumption of trans fats is by reducing saturated fats, and therefore reducing consumption of meats and full fat dairy products
    - Also lower intake of deep fried foods and processed foods
- Other fats can be beneficial: monosaturated fats (found in avocado) can improve blood cholesterol and protect against some cancers
- Whichever source of fat, eat it in moderation
- Omega 3-fatty acids found in fish is a polyunsaturated fats are good for you because they reduce the tendency of blood clots and and inhibit inflammation and abnormal heart rhythms
    - Because of this, dietitians recommend 2-3 serving of fish per week
- Most polyunsaturated fats consumed by Canadians are omega-6 fatty acids and come from corn oil or soybean oil.
    - Omega 6 is important for getting your essential linoleic acid
- Nutritionists say to reduce omega 6 and instead have omega 3

- Increased fats and meats can increase chance of cancers and make weight management more difficult
- A high fat diet is typically a higher calorie diet and calories from fat are more easily converted to body fat than carbohydrates

Recommended fat intake:

- Men need around 17 grams of linoleic acid and 1.6 grams of alpha-linolenic acid
- Women need 12 grams of linoleic acid and 1.1 grams of alpha-linolenic acid
- It only takes 2-3 tbsp of unsaturated fat per day to supply essential fats
- Total fat should be 20-35% of the calories you consume daily
    - Omega 6 should be 5-10 %
    - Omega 3 should be 0.6-1.2%

Carbohydrates:

- Primarily supplies energy and fuel (during exercise)
- When we don't get enough, our bodies synthesize carbs from proteins
    - In extreme situation when protein is deprived as well, the body turns to its own organs and tissues to turn it into carbs
- Consuming 3-4 slices of bread is adequate amount of carbs to sustain the body daily
-

Simple and complex carbs:

- simple: sucrose, fruictose, maltose, lactose,
    - table sugars, honey, fruit, etc.
    - provides sweetness in foods
- complex: starches and fibres
    - found in grains, legumes, potatoes
- when digesting, food is broken down into simple sugars (glucose) in small intestine and once in the bloodstream the pancreas releases insulin which allows for up take of glucose to use for energy
- the liver and muscles take up glucose and provide carbohydrate storage in the form of glycogen.

Refines carbs vs. whole grains

- before processed, all grains are whole grains consisting of an inner layer (germ) and middle layer and endosperm; as well as an outer layer
- processed gains have the germ and outer layer (bran) removed leaving just the strarchy endosperm
- refined carns usually retain all the calories of unrefined, but they are lower in fibre and nutrients
- added sugars are problematic is consuming too much can lead to heart disease, stroke, obesity, diabetes, etc.
- Canadians are consuming too much added sugars
    - Recommend reducing sugars to no more than 10% of daily calories
- Unrefined tend to take longer to chew and digest and they enter the bloodstream more slowly and people feel fuller sooner and longer
- Whole grains has been linked to reduced risk of heart disease, diabetes, etc.
- Opt for whole grains over refined grains

Glycemic Index and Glycemic response:

- Insulin and glucose levels rise at fall as we eat
- Some foods can cause dramatic level changes (high glycemic index) while others are more slow
- High index shows feeling hungry sooner and increase health problems
    - They do not, however, have a direct affect of weight gain
- Patterns of index are not very clear
    - ex: rice and potatoes are complex carbs but high index
- acid also has an affect on index, as well as with which food it is combined with and how it is prepared
    - this is why there is no guideline in place

recommended carb intake:

- 45-65% of total calories
    - about 225-325 grams
- no more than 25 grams of added sugar a day
- athletes who are training may consume up to 70% carbs
- over consumption can lead to fatigue and under consumption can lead to can lead to under consumption of other nutrients
- athletes should focus on eating complex carbs such as whole grains, pastas, starchy vegetable, etc.

Fibre:

- term given to non-digestible carbs provided by plants
- passes through large intestine and provides bulk for feces in large intestine wgich facilitates elimination
- in large intestine can be broken doen by bacteria, amino acids, or gases which is why it could lead to gas
- fibre is not a source of carbs, but its necessary for good health

types of fibre:

- dietary fibre: non-digestible carbs that are present naturally in plants
- functional fibre: non- digestible fibre that has been either isolated from natural sources or synthesized in the lab and then added to food
- total fibre= sum of both fibres
- soluble (viscous) fibres: can delay stomach emptying, slow the movement of glucose into the blood, after eating, and reduce absorption of cholesterol
- insoluble fibre: increases fecal bulk and helps prevent constipation, hemoroids.
- A doet high in fibre can help prevent type 2 diabetes and heart disease and colon and rectal cancer

Sources of fibre:

- All plant foods
- Fruits, legumes, oats all contain viscous fibre
- Wheat. Vegetables are a good source of insoluble fibre
- Processing of packaged foods can remove fibre

Recommended fibre intake:

- 38 grams for men

- 25 grams for women
- Canadians on average consume half this amount
- Should come from foods, and not supplements

Vitamins: organic micronutrients

- Organic (carbon containing) substances needed to regulate body processes
- Humans need 13 vitamins:
    - 4 fat soluble (A,D,E,K)
    - 9 water soluble (C and B complex, thiamine, riboflavin, niacin, vitamin B6, folate, vitamin B12, biotin, pantothenic acid)
- solubility affects how it is stored, absorbed and transported
- water soluble enters straight into bloodstream
    - excess is detected and removed by the kidneys and excreted in urine
- fat soluble is more complex and carried around by proteins stored in liver and fat tissues

Functions of Vitamins:

- don't directly provide energy, but they do provide the release of energy from carbs
- critical in production of red blood cells and maintenance of body systems
- some act as antioxidants: preserve healthy cells (vitamin E, C, A)

Sources of Vitamins:

- cant manufacture, so must get from food
- abundant in food, vegetables and grains
- skin makes vitamin D when exposed to sunlight
- intestinal bacteria make vitamin K

Vitamin deficiencies:

- lack of vitamin can be fatal ➔can cause scurvy
- lack of vitamin D can develop rickets which can lead to bone deformations or heart disease (the vitamin assists with blood clots), as well certain types of breast cancer are more likely
- lack of vitamin A cam cause blindness
- lack of vitamin B6 can cause seizures
- lack of b6, b12, or folate can lead to increase risk for heart disease
- lack of vitamin K is linked to bone brittleness
- vitamin deficiencies most likely seen in developing countries and are fairly rare in Canada
- still, Canadians consume less than they should of vitamin A, C, E.
- vitamin D and calcium are crucial for health benefits

Vitamin excesses:

- too much, especially in the form of supplements, may be harmful
- fat soluble is extra dangerous as it is stored in the body rather than than excreted and increasing risk of toxicity
- high levels of vitamin D supplements are known to cause tissue and kidney damage
    - more is not always better

Keeping the nutrients:

- vitamins and minerals can be lost in cooking food
- to keep the nutrients, freeze food

- canned foods may have added sodium
- to reduce loss, minimize the amount of water used and the total cooking time
    - baking, steaming, broiling, grilling, and microwaving are all healthy ways of eating vegetables

Minerals:

- inorganic
- need small amounts to help regulate body functions and aid in the growth and maintenance of body tissues and release of energy
- 17 essential minerals
- major minerals: calcium, zinc, phosphorus, sodium, potassium, chloride
- minor minerals: copper, fluoride, iodide, iron, selenium, and zinc
- consuming too much or too little could be bad
- iron deficiency: anemia
- calcium deficiency: osteoporosis

Eating for healthy bones:

- most bone mass is produced by age 18 and bone density peaks between 25-35
- genetic factors contribute to 50-90% of bone mass
- to prevent osteoporosis, bulk up your bones when you grow up
    - calcium- build and maintain bone mass
    - vitamin D- necessary for bones to absorb calcium
    - Vitamin K – synthesizes protein to keep them strong
- Consuming excess alcohol, sodium, caffeine can increase the risk of bone fracture
- Protein helps as long as we have adequate intake of vitamins
- Weight bearing exercise helps maintain bone mass

Water:

- Major component of foods and human body
- Can live up to 50 days without food, but only a few days without water
- Used in digestion and absorption of food
- Blood is water based
- Water regulates body temperature
- Lose water each time you urinate
- Men Should consume about 3.7 litres of water while women need 2.7 litres
    - More if you exercise

Other substances in Food:

- Antioxidants:
    - when body uses oxygen or metabolises food, it gives rise to free radicals
    - Smoke in environment can increase free radicals
    - Chemically unstable molecule that reacts with proteins, fats, DNA, and damages the cell membrane and mutates genes
    - Antioxidants can protect the body from this damage by either removing or reducing production of free radicals
    - Some antioxidants are also essential nutrients (vitamin C and E)

    - Antioxidant rich food: blackberries, walnuts, strawberries, artichokes, brewed coffee, cranberries, pecan, blueberries, grape juice, dark chocolate, red wine.
- Phytochemicals
    - Antioxidants fall into this broader category
        - Substances found in plants that may help prevent chronic disease

Should you take supplements?

- Supplements lack phytochemicals and fibres
- Women who are pregnant should take folate
- Smokers should take vitamin C
- Women with heavy periods should take iron
- Vegetarians may need extra supplements

Guideline for Healthy Eating:

- Enjoy a variety of foods
- Emphasize cereals, grains, breads vegetable, and fruit
- Choose lower fat dairy products and leaner meats prepared with little or no fat
- Enjoy physical activity
- Limit alcohol and caffeine

Adequate nutrients within calorie needs: c

- Choose foods from Canada's food guide by following the amount of serving you need from each food group
- One's food choice can also be influenced by cultural preferences, moral beliefs, and cost and availability of food
- If you must avoid all foods of one food group, make sure you get enough of the other food groups

Thinking about the environment:

- Growing demand for corn instead of gas fuel has driven up the prices
- Cost of rice has risen in fear of shortage
- Riots started in Haiti and Egypt because of food shortages and high prices

Sodium and potassium:

- Salt Only need small amount
    - By reducing intake, reduce blood pressure and risk of heart conditions
- Salt in often found in processed foods
- Reducing potassium could also be beneficial for lowering blood pressure
    - Fruits and vegetables may not have sodium but do contain potassium

Alcoholic beverages:

- Lots of calories without the nutrients
- Having no more than 2 drinks can reduce mortality rates for older people

Eating well with Canada's food guide:

- Prevent nutritional deficiencies
- Mediterranean diets: high I veggies, fruits, legumes an buts and moderate consumption of fish, dairy and the use of olive oil.
    - Lowered heart disease and cancer, as well as Alzheimer's

Key messages of Canada's food guide:

- Variety

- Serving sizes and quantities
- Make each serving count
- Gives different advice for different genders and ages
- Promotion of physical activity

Judging portion sizes:

- Cheese= 2 dice
- Margarine= tip of thumb
- Chicken= deck of cards
- Pasta= baseball
- Peanut butter= golf ball
- Potato= computer mouse
- Bagel= hockey puck
- Fruit= baseball or light bulb
- Nuts= golf ball

The following count as one serving:

- Grains: (should get 6-8 servings)
    - 1 slice of bread
    - 1 small muffin
    - 1 cup cereal
    - ½ cup rice, pasta, grains
    - 1 tortilla
- veggies and fruit: (should have at least one dark green and orange vegetable daily)
    - ½ cup begetables
    - 1 cup leafy greens
    - ½ cup vegetable juice
    - ½ cup fruit
    - ½ cup fruit juice
    - 1 whole fruit
    - ½ cup dried fruit
- milk:
    - 1 cup milk
    - 50 g natural cheese
    - ¾ cup yogurt
    - if lactose free make sure its fortified
- meat and alternatives:
    - 75 g cooked meat or fish
    - ¾ dry beans or tofu
    - 2 eggs
    - 1 tbsp peanut butter
    - ¼ cup nuts or seeds

discretionary calorie allowance:

- if a healthy diet is followed, there is room for some not as healthy foods
- ex: added sugars, saturated fats

The vegetarian Alternative:

- diets tend to be lower in saturated fats and cholesterol and higher in complex carbs, dietary fibre, folate, vitamin C and E, carotenoids and phytochemicals,
- evidence that this diet lowers chronic diseases
- vegetarians tend to not smoke, and exercise more which increases wellness

A food plan for vegetarians:

- eat beans, tofu and nuts and tempeh instead or meat
- plant proteins are generally lower in quality than animal protein, however they will supply the amino acids needed
- they may lack vitamin D and B12.
    - B12 can get form fortified soy beverages, meat alternatives, yeast products
    - Vitamin D can be from fortified dairy free products and supplements
    - Calcium: legumes, tofu, dark greens, nuts,
    - Iron: whole grains, nuts, seeds,
    - Zinc: whole grains, nuts, legumes, etc.

Different nutritional needs for women and men:

- Women need fewer calories because they tend to be smaller
- Women need same amount of nutrients, but may be required to consume more than recommended calories in order to satisfy all their nutrient needs
- Women need to pay more attention to calcium and iron
- Men tend to consume more red meat and fewer vegetables and fruit

Children and Teenagers

- Young people need to be encouraged to eat
- Best thing for parents to do is to provide children with variety of food
- Add vegetables to casseroles, fruit to cereal, no sugary drinks, etc.
- Many children enjoy fast foods; they should be encouraged to select the healthiest options from their menus

College Students:

- Convenient foods and cheap foods are not the healthiest
- Its easy for students in dining halls to overeat and the food provided is not high in essential nutrients and low in fat.

Take charge:

- General Guidelines:
    - East slowly and enjoy yourfood
    - Eat the rainbow
    - Eat breakfast: more energized and less likely to grab unhealthy snack later on
    - Choose healthy snacks such as fruits, veggies, grains
    - Drink water more often than soft drinks
    - Pay attention to portion sizes
    - Combine physical activity with healthy eating. You will feel better and have a much lower risk of chronic diseases
- Eating in the Dining hall
    - Choose a meal plan that includes breakfast

    - Accept the fact that dining food is not going to taste the same as home cooked
    - If menus are posted and distributed, decide what you want to eat before hand and stick with it
    - Ask for large serving of vegetables and small servings of less healthy things
    - Try whole grains
    - Choose leaner poultry over fried things
    - Ask for sauces on the side
    - Choose broth based rather than cream based soups
    - At the salad bar load up on veggies and avoid mayonnaise and high fat dressings
    - Drink low-fat milk, water, 100% fruit juice, etc.
    - Choose fruit for desert over cakes
    - Do research on how they prepare the foods
- Eating in fast food restaurants:
    - Most can provide the nutritional breakdown of the foods on the menu
    - Order small or single burger with no cheese
    - Ask for items without mayonnaise or high fat dressings
    - Choose whole-grain buns
    - Choose chicken breast instead of processed chicken
    - Order vegetarian pizza
    - If you get fried food, order the smallest size and share them
- Eating on the run:
    - Pack snacks ahead of time such as fruit, low-fat cheese sticks, plain bagels, veggies, rice cakes, et,

Older adults:

- Older adults tend to become less acrive so they need fewer calories
- Must eat nutrient dense foods to get all the essential things
- Constipation is a common issue
    - Important to consume lots of fibre and fluids

Athletes:

- They must meet their increased energy requirements and drink enough during practice to remain hydrated
- May also benefit from increasing carb intake to 70%
    - Should be complex
- Athletes who need to be physically a certain shape should consume all the needed nutrients and have normal eating habits

Low income families:

- Often they do not have enough income to support a healthy diet
- If using food banks and soup kitchens, finding healthy food is even harder

First Nations:

- Hard to prepare and find healthy food on reserves
- At risk of numerous chronic diseases, mental illnesses, and addictions
- Health program put in place to support these communities

- Health Canada also produced a food guide designed just for them that meshes traditional foods and food found in their stores
- Available in their language

People with Special Health concerns:

- Women who are breastfeeding or pregnant require more calories, vitamins, and minerals
- Diabetes should have well balanced diet with low sugars and high carbs
- People with high blood sugar need to control weight and limit their sodium consumption

Reading food labels:

- Shows serving size and amount of saturated and trans fat, as well as cholesterol, sodium, total carbs, dietary fibre, sugars, protein,
- Fresh meat, poultry, fruits, and vegetables don't have food labels and many aren't packaged
    - You can find their nutrition info from books, dieticians, websites
-

Selected nutrient claims and what they mean

- Light: reduced in energy or fat
- Reduced: at least 25% less of a nutrient than a similar product (fat, sodium, cholesterol, etc.)
- Low in calories: 40 Calories of less per serving
- High source of fibre: 4 g per serving of each fibre
- Good source of fibre: 2 g of each fibre
- Fat free: less that 0.5 g of fat per serving
- Reduced fat: 3 g of fat per serving
- Saturated fatty acid free: less than 0.2 g per serving
- Cholesterol free: less than 2 mg per serving and low in saturated fatty acids
- Low in sodium: 140 mg or less per serving
- Sodium free: less that 5 mg per serving
- Lean: cooked with no more than 10% fat

Natural Health Products:

- Vitamins, minerals, herbal remedies, etc.
- These products do have powerful chemicals and can be harmful
- If consumed in excess can be toxic
- Natural Health Products Doctorate's role is to ensure that Canadians have easy access to safe, effective, and high quality natural products
- Dosage exists but not very well established for ALL products
- Must undergo studies on safety, side effects, and interaction
- The strength of natural products varies widely due to storage and preparation methods
    - Recalled many products because of prescience of dangerous chemicals
- To be sold, product must have license from Health Canada, and if granted, must also have a NPN 8-digit number.

- Should remember these should not replace a healthy diet

Protecting yourself against Food-Borne illnesses:

- Undercooked or raw animal products are at greatest risk of possessing illness
- 11-13 million illnesses result from this
- most people fully recover, however CAN result in chronic long term consequences such as chronic arthritis and kidney failure
- can also create an economic deficit
- weakened immune system, pregnant women, older adults are more susceptible
- symptoms include: diarrhea, vomiting, fever, weakness
- pathogens are the disease causing microorganisms. They are usually killed during cooking.
- If not handled or cooked properly, it can spread
- If you think you caught the illness drink plenty of clear liquids to prevent dehydratipn and rest to speed recovery
    - To prevent further contamination, wash your hands

Environmental Contaminants and Organic Foods

- Contaminants are also present in the food-growing environment, but most of the time not sufficient to cause health problems.
- include various minerals, antibiotics, hormones, pesticides, the industrial chemicals known as **PCBs (polychlorinated biphenyls)**, and naturally occurring substances, such as cyanogenic glycosides (found in lima beans and the pits of some fruits) and certain moulds.
- Their effects depend on many factors, including concentration, length of exposure, and the age and health status of the person involved.
- Safety regulations attempt to keep our exposure to contaminants at safe levels, but monitoring is difficult and many substances (such as pesticides) persist in the environment long after being banned from use.
- Some people who are concerned about pesticides and other environmental contaminants choose to buy foods that are **organic.** To be certified as organic by Canadian Food Inspection Agency, foods must meet strict production, processing, handling, and labelling criteria.

Organic foods are not necessarily chemical-free. Some organic or naturally-based pesticides are permitted for use as long as they are included on an approved list by Canadian Organic Standards

Safe food handling:

- Don’t but food in containers that have leaked
- Refrigerate persishable foods asap
- Don’t cross contaminate in fridges
- Cook stuffing separate from poultry
- make sure all cooking utensils are clean
- thaw frozen food in fridge; not counter and cook immediately after thawing
- store eggs in coldest part of fridge

- when in doubt throw it out
- improper heating or cooling can allow bacteria to survive and multiply rapidly

Local Foods and Slow Food

- New food movements are taking place across Canada, including eating locally and the slow food movement. Eating locally promotes the benefits of buying agricultural products grown close to our backyards.
- Some marketing agencies and companies promoting their local foods identify how far food travels to reach the consumer; others choose to promote the economic and health benefits of purchasing food grown closer to home.

Guidelines for Fish Consumption

- A specific area of concern is possible mercury contamination in fish. Overall, fish and shellfish are healthy sources of protein, omega-3 fats, and other nutrients. High mercury concentrations are most likely to be found in predator fish—large fish that eat smaller fish.
- Mercury can cause brain damage to fetuses and young children.
- The levels of mercury in the muscle tissue of salmon are very low. Separate studies have identified other chemicals, such as polychlorinated biphenyls (PCBs), in the fat of both wild-caught and farmed salmon. These chemicals can be found in most fish and in many other foods, but at low levels that do not cause concern for human health.

Additives in Food

- Today, some 2800 substances are intentionally added to foods to maintain or improve nutritional quality, to maintain freshness, to help in processing or preparation, or to alter taste or appearance. Additives make up less than 1 percent of our food. The most widely used are sugar, salt, and corn syrup; these three and citric acid, baking soda, vegetable colours, mustard, and pepper account for 98 percent by weight of all food additives used in Canada.
- Some additives may be of concern for certain people, either because they are consumed in large quantities or because they cause some type of reaction.
- Food additives pose no significant health hazard to most people because the levels used are well below any that could produce toxic effects.

Food Irradiation

- **Food irradiation** is the treatment of foods with gamma rays, X-rays, or high-voltage electrons to kill potentially harmful pathogens, including bacteria, parasites, insects, and fungi that cause food-borne illness.
- It also reduces spoilage and extends shelf life. For example, irradiated strawberries stay unspoiled in the refrigerator up to three weeks, versus only three to five days for untreated berries.

Genetically Modified Foods

- Genetic engineering involves altering the characteristics of a plant, an animal, or a microorganism by adding, rearranging, or replacing genes in its DNA; the result is a **genetically modified (GM) organism.**
- New DNA may come from related species or from entirely different types of organisms.

- Products made with GM organisms include juice, soft drinks, nuts, tuna, frozen pizza, spaghetti sauce, canola oil, chips, salad dressings, and soup.
- The potential benefits of GM foods cited by supporters include improved yields overall and in difficult growing conditions, increased disease resistance, improved nutritional content, lower prices, and less pesticide use.
    - Despite these benefits, there could be negative outcomes such as raising the levels of naturally occurring toxins or allergens.

Animal Cloning

- Cloning allows producers to create animals with highly desirable characteristics, such as disease resistance and more predictable fat-to-lean meat ratios.
- The recently developed method of animal cloning called somatic cell nuclear transfer (SCNT) has raised potential food safety concerns.

Labelling of GM Foods

- Labelling has been another major concern, with surveys indicating that most Canadians want to know if their food contains GM ingredients. Health Canada does not require special labelling for foods from genetically modified or cloned sources.
- Under current rules, Health Canada requires special labelling only when a food's composition or nutrition profile is changed significantly or when a known allergen, such as a peanut gene, is introduced into a food.

Food Allergies and Food Intolerances

- For some people, consuming a particular food causes uncomfortable symptoms, such as itchiness, swollen lips, or abdominal pain.
- A true **food allergy** is a reaction of the body's immune system to a food or food ingredient, usually a protein. The immune system perceives the reaction-provoking substance, or allergen, as foreign and acts to destroy it.
    - This immune reaction can occur within minutes of ingesting the food
    - The most severe response is a systemic reaction called *anaphylaxis,* which involves a potentially life-threatening drop in blood pressure.
- Although numerous food allergens have been identified, just eight foods account for more than 90 percent of the food allergies in Canada: cow's milk, eggs, peanuts, tree nuts (e.g., walnuts, cashews), soy, wheat, fish, and shellfish.
- Food labels are now required to state the presence of the eight most common allergens in plain language in the ingredient list.
- People at risk are usually advised to carry medications to treat anaphylaxis, such as injectable epinephrine.
- Many people who believe they have food allergies may actually have a much more common source of adverse food reactions: a food intolerance. In the case of a **food intolerance,** the problem usually lies with metabolism rather than with the immune system. Typically, the body cannot adequately digest a food or food component, often because of some type of chemical deficiency; in other cases, the body reacts to a particular compound in a food.
- Food intolerance reactions often produce symptoms similar to food allergies, such as diarrhea or abdominal cramps, but reactions are typically localized and not life

threatening. Many people with food intolerances can consume small amounts of the food that affects them; exceptions are gluten and sulphites, which must be avoided by sensitive individuals. Through trial and error, most people with food intolerances can adjust their intake of the trigger food to an appropriate level.

Definitions:

Nutrition: The science of food how the body uses it in health and disease
Essential nutrients: Substances the body must get from foods because it cannot manufacture them at all or fast enough to meet its needs; includes proteins fats, carbohydrates, vitamins, minerals, and water
Macronutrients: essential nutrients required by the body in relatively large amounts
Micronutrients: essential nutrients required by the body in minute amounts
Digestion: the process of breaking down foods in the gastrointestinal tract into compounds the body can absorb
Kilocalorie: a measure of energy content in food; 1 kilojule represents the amount of heat required to raise the temperature of 1 litre of the water by 1 degree celcius; a.k.a calorie
Protein: an essential nutrient; a compound made up of amino acids that contain carbon, hydrogen, oxygen, and nitrogen
Amino acids: building blocks of protein
Legumes: vegetables, such as peas and beans, that are high in fibre and are also important sources of proteins
Hydrogenation: a process by which hydrogens are added to unsaturated fats, increasing the degree of saturation and turning liquid oils into solid fats. Hydrogenation produces a mixture of saturated fatty acids and standard fatty acids and standard and trans forms of unsaturated fatty acids
Trans fatty acid: a type of fatty acid produced during the process of hydrogenation; trans fats have an atypical shape that affects their chemical acids
Cholesterol: a waxy substance found in the blood and cells and needed for synthesis of cell membranes, vitamin D, and hormones
Low density lipoprotein (LDL): blood fat that transports cholesterol to organs and tissues; excess amounts results in the accumulation of deposits on artery walls
High-density lipoprotein (HDL): blood fat that helps transport cholesterol out of the arteries, thereby protecting against heart disease
Omega-3 fatty acids: polyunsaturated fatty acids commonly found in fish oils that are beneficial to cardiovascular health
Carbohydrate: an essential nutrient; sugar, starches, and dietary fibre are all carbohydrates
Glucose: a simple sugar that is the body's basic fuel
Glycogen: an animal starch stored in the liver and muscles
Whole grain: the entire edible portion of grain, such as wheat, rice, or oats, consisting of the germ, endosperm, and bran. During milling and processing, parts of the grain are removed, often just leaving the endosperm
Dietary fibre: non-digestible carbohydrates and lignin that are intact in plant
Functional fibre: non-digestible carbohydrates either isolated from natural sources or synthesized; may be added to foods and dietary supplements

Total fibre: the amount of dietary fible and functional fibre in a diet
Soluble (viscous) fibre: Fibre that dissolves in water or is broken dowsn by bacteria in the large intestines
Insoluble fibre: fibre that does not dissolve in water and is not broken down by bacteria in the large intestine
Vitamins: carbon-containing substances needed in small amounts help promote and regulate chemical reactions and processes in the body
Antioxidants: substances that can lessen the breakdown of food or body constituents by free radicals; actions including binding oxygen, donating electrons to free radicals, and repairing damage to molecules
Minerals: inorganic compounds needed in relatively small amounts for regulation, growth, and maintenance of body tissues and functions
Anemia: a deficiency in oxygen- carrying minerals in the red blood cells
Osteoporosis: a condition in which bones become extremely thin and brittle and break easily
Free radical: an electron-seeking compound that can react with fats, proteins, and DNA, damaging cell membranes and mutating gene in its search for electrons; produces through chemical reactions in the body and by exposure to environmental factors, such as sunlight and tobacco smoke
Phytochemicals: naturally occurring substances found in plant foods that may help prevent and treat chronic diseases, such as cancer and heart disease; phyto means plant
Cruciferous vegetables: vegetables of the cabbage family, including cabbage, broccoli, Brussel sprouts, kale, and cauliflower; the flower of these plants form in the shape of a cross, hence the name
Dietary reference Intake (DRI's): An umbrella term for 4 types of nutrition standards. Estimated average requirement (EAR) is the amount estimated to meet the nutrient needs of half the individuals in a population group; adequate intake (AI) and recommended dietary allowance (RDA) are levels of intake considered adequate to prevent nutrient difficiencies and reduce the risk of chronic diseases for most individuals in a population group; tolerable upper intake level (UL) is the maximum daily intake that is unlikely to cause health problems
Guidelines for healthy eating: General principles of good nutrition presented as practical ways that Canadians can follow a healthy diet and reduce their risk for chronic disease
Daily values: a simplified version of RDAs used of food levels, includes values for labels for nutrients with no RDA
Vegans: no animal's products at all
lacto-vegetarians: include milk and cheese products into their diets
lacto-ovo-vegetarians: no meat, poultry, or fish, but do wat eggs and milk products
Partial vegetarian: include eggs, dairy products, and small amounts of meat or fish into their diet
pathogens: microorganisms that cause disease
polychlorinated biphenyl (PCB): An industrial chemical used as an insulator in electrical transformers and linked to certain human cancers
organic: a designation applied to foods grown and produced according to strict guidelines limiting the use of pesticides, non-organic ingredients, hormone, antibiotics, irradiation, genetic engineering and other practices

food irradiation: the treatment of food with gamma rays, X-rays, or high voltage electrons to kill potentially harmful pathogens and increase shelf life
Genetically modified organism: a thing where genes have been added, rearranged, or replaced through genetic engineering
Food allergy: an adverse reaction to a food in which the immune system perceives a particular substance as foreign and destroys it
Food intolerance: doesn't involve the immune system; often a problem with metabolism

Quick stats:

- worldwide, 45% of childhood deaths and 11% of diseases are attributed to undernutrition
- Canadians, on average, consume 8.4 grams of trans fatty acids each day
- 100 grams of Atlantic salmon provides 2 grams of omega-3 fatty acids, while 1 teaspoon of flaxseed oil provides 2.6 grams of omega-3 fatty acids
- breakfast foods typically contain mostly carbohydrate-rich foods, and about 18% of daily calories are consumed at breakfast
- A healthy diet needs 21 to 38 grams of fibre a day, but Canadian nutrition surveillance surveys how that the average daily Canadian intake is only about 14 grams
- at least 80% of fractures in people 50 years of age and older are related to osteoporosis
- in 20122-2012, 8.3% of households or almost 1.1 million households, experienced food insecurity. Of those households, 5.8% experienced a moderate rate pf food insecurity, and 2.5% experienced a severe rate
- more than half of Canadians are consuming more than double the recommended daily amount of sodium. It is estimated Canadians 1 year of age and older eat 3400 mg/day of sodium.
- 47% of Canadian females and 34.6% of male's report consuming 5 or more servings of fruits and vegetables each day
- 4% of Canadians describe their typical diet as vegetarian
- 73% od Canadians take natural health products
- about 87510 cases of salmonella infections occur annually in Canada
- 2% of children 5-9 have a peanut allergy. For 80% of people with peanut allergies, it will last their whole life

Chapter 6

Guest lecturer:

- need a bachelor's degree in nutrition to become a dietician

The situation in Canada:

- ranks #5 for obesity in adults
- 2/3 Canadians are obese or overweight
- 33% of children are overweight
- since 1980 twice as many adults are overweight and 3x children are overweight

Why are Canadians overweight?

- Genetics
- Diet
- Lifestyle
- Physical inactivity
- Medications
- Physiological factors (stress, anger, sadness)
- Disease
- Low socioeconomic status

Consequences:

- Heart disease
- High blood pressure
- Cancer
- Deoression
- Premature death
- Financial burden
- Type 2 diabetes
- Poor quality of life

What are we doing about it?

- Updating food labels and food guides
- Calories on restaurant menus
- Challenge based exercise programs
  – step counting
- More recreation centers and weight loss programs
- Controlled food advertising for children
- Wellness Programs

Diet myths busted:

- Eating fat will make you fat
  - Fat is an essential nutrient that has good benefits (the good fats)
- Eating eggs raises cholesterol
  - New research suggests to reduce cholesterol we should reduce saturated and trans fats
  - Egg research showed no correlation to heart disease
- Carbs are bad for you

    - Carbs are essential for energy
- Gluten is bad for your health
    - Gluten = the protein found in breads
    - Only 1% of population have actual gluten intolerances
- Fructose is far worse and damaging than sugar
    - At high amounts could be true, but comparing 100 grams, only 5 grams worse
    - Really equally bad for you
    - As well fructose is naturally found in good foods like fruit
- Supplements are necessary and superior to food
    - Better to eat actual real foods
- Eating aster 8 pm causes weight gain
    - Usually the types of food we eat at night is what makes us gain weight
- Eat less and exercise more to achieve your weight loss
    - Many factors contributing
    - Calorie restricting doesn't work and actually they gain weight and slow down metabolism
- One must detox to rid toxins and be healthy
    - Toxins are poisons and chemicals
    - Unless one's kidneys and lungs are not working, we can naturally filter out toxins as waste
    - Not long term solution and often weight is gained back after detox
- Organic foods are healthier
    - Use manure to enrich soil
    - Anti-pesticides and growth hormones are not allowed in organic foods

Tips:

1) Balanced plate method
    - Half plate with veggies, ¼ plate protein, ¼ carbs
2) Portion size
    - Portion guidelines:
        - Fruit: tennis ball (fist)
        - Grains: first (1/2 first)
        - Meat: deck of cards

3) Meal and snack planning
4) Plan your Grocery trip
5) Add colour to your plate
    - Darker the colour, healthier
6) Move more
7) Sleep adequately
8) Find your emotional outlet and be kind to yourself

How can a dietician help?

- Provide individualized guidance based on nutritional needs and goals
- Provide constant support and accountability

- Refer to resources, as appropriate

What to expect for your appointments?

- Personalized, non-judgemental guidance
- Review medical status, current lifestyle habits, and motivation
- Create a plan TOGETHER to suit your needs and goals

Each plan is unique. We provide individualized guidance for:

- Cost effective meal and snack planning
- Improved cooking skills and recipes
- Reaching healthy body weight
- (weight gain/loss)
- Managing disordered eating/digestive healthy concerns/food intolerances
- Maximizing athletic performance
- Living on your own for the first time!
- **Life-long nutrition habits to support a healthier life!**

Constant support and accountability

Lecture:

What is physical fitness?

- Physical fitness: body's ability to respond or adapt to the demand of stress of physical effort, that is, to perform moderate to vigorous levels of physical activity without being overly tired
- Health related fitness:
    - Cardiorespiratory endurance
    - Muscle strength
    - Flexibility
    - Body composition
    - ** helps with physical challenges and protects from diseases

Cardiovascular endurance:

- ability to perform prolonged endurance
- depends on factors such as lung's capability to deliver oxygen to the bloodstream, heart's capacity to pump blood, ability of the nervous system and blood vesicles to regulate blood flow, and the body's ability to use oxygen and process fuels for exercise
- when fitness is low, heart has to work harder during normal daily activities and may not enough
- poor fitness is associated with heart disease, diabetes, colon cancer, stroke, depression, anxiety
- cardiorespiratory **endurance training** (like cardio) conditions the heart to become stronger and improves its functions
    - heart pumps more per heartbeat
    - resting heart rate and blood pressure decrease

    - blood supply to tissues improves
    - body can cool itself better
- a better heart can be better during tough times and unexpected emergencies
- also improves chemical systems (muscles and liver)

muscle strength:

- depends on size of muscle cells and ability of nerves to activate the muscle cells
- strong muscles are important for everyday activities
- help keep proper alignment of skeleton, prevents back and leg pain, good posture,
- muscle tissue important because it burns more calories than fat and increases metabolism
- healthy aging: people tend to loss muscle mass and muscle strength as they age (sarcopenia) and many other muscle cells become non-functional and detach from the nerves. Strength training maintains muscle mass, function, and balance
- strength training improves cardiovascular health and reduces the risk of osteoporosis

muscle endurance:

- depends on muscle cell size, ability of muscles to store fuel, blood supply to the muscles
- important for good posture and injury prevention
- if abdominal and back muscles can't hold spine correctly, the chances of lower back pain and back injury are increased.
- Helps people cope with physical demands of everyday life and enhances [performances in sport and work

Flexibility:

- Ability to move joints in full range of motion
- Depends on joint structure, length and elasticity of connective tissue, and nervous system activity
- Inactivity causes joints to become inactive and stiff with age
    - Can lead to unnatural body posture that can stress joints and muscles
    - Stretching and exercising can help

Body composition:

- Refers to proportion of fat and fat-free mass in the body
- Healthy body composition includes high proportion fat-free
- Excessive body fat (especially in the abdomen) is related to health related problems
- Best way to lose fat is through exercise and diet
- Best way to gain muscle mass is through resistance training

Skill related components of fitness:

- The ability to perform a particular sport may be dependent on:
    - Speed: perform movement in short time
    - Power: exert a force rapidly
    - Agility: change the body's position quickly and accurately
    - Balance: maintain equilibrium in different states
    - Coordination: ability to perform motor tasks accurately and smoothly using body movements and senses
    - Reaction time: ability to respond quickly to a stimulus

- Tends to be sport specific and best developed through practice

Physical activity and exercise for Health and Fitness

- Canadian males are more active than females
- Less than half the population are active enough to meet the health gains
- In the last 3 decades' Canadian fitness levels have declined dramatically
- Fitness has been proven to improve memory, concentration, learning
- One of the factors that has decreased fitness levels among children is transportation to school
-
- Differences among ethnicities: white and aboriginal people are most likely to be moderately active, black and Asian are less likely to be adequately active
- Generally, healthy weight people get more physical activity than those who are obese

Exercise and Total wellness:

- If you are active you will likely live 2-4 years longer
- Other benefits include:
- Physical wellness:
    - Generate more energy
    - Increase stamina
    - Control your weight
    - Boost immune system
    - Help avoid illnesses and prevent premature death
- Emotional wellness:
    - Contributes to your sense of competence and well- being
    - Improved self-image, higher level of self-confidence
- Intellectual wellness:
    - Exercise is good for the brain
    - Brain volume increases with exercise
    - Helps reduce mental decline with aging
    - Improve cognitive functions and overall health of nervous system
    - Mastering physical challenges can boost intellectual fitness in the same manner as solving puzzles or engaging in learning experiences
- Interpersonal wellness:
    - Exercising with friends or group can create new friendships or deepen relationship and build a stronger overall network of support

Physical activity on a continuum:

- Different types of physical activity require different amounts of energy
- Levels of fitness depend on physiological factors such as heart's ability to pump blood and size of muscle fibres
    - Rely on both genetics and behaviour (amount of exercise they participate in)
- To develop fitness, a person must perform enough physical activity to stress the body and cause long term physiological changes
- Physical activity is NOT the same as exercise

Increasing physical activity to improve health and wellness:

- In 1988 created Canada's Physical Activity Guide to Healthy Active Living
- 2/3 of Canadians were inactive and it was a threat to their health and a burden to the Health Care system
- guide similar to Canada's food guide and helped them judge how much physical activity they needed to achieve better health
- for 18-64 year olds it is recommended to do strength training at least 2 times a week and moderate – intensity to vigorous intensity aerobic physical activity most days
    - each aerobic session should be at least 10 minutes, and over the week should accumulate 150 minutes per week
    - also encouraged to minimize stationary behaviours
- moderate activities for 30 minutes uses 150 calories
    - burn same amount doing less intense activities for longer, or more intense activities for shorter periods of time
- easy to fit required amount of activity because the activities can be done all at once or in 10 minute intervals throughout the week
- for 5-11 year olds:
    - accumulate 60 min daily
    - vigorous intensity 3 times a week
    - muscle strength 3 times a week
- for 12-17 year olds:
    - same as 5-11 year olds
- over 65:
    - same as 18-64 year olds
    - those with poor mobility should perform physical activities that enhance balance and prevents falls
- encourage children up to 4 years old to have minimal time sedimentary and they shouldn't be in a stroller or high chair more than an hour at a time
- recommend children under 2 have no screen time and children 2-4 have less than an hour of screen time a day . 5-7 no more than 2 hours a day
-

Classifying Activity levels:

- light: routine tasks associated with day-to day life, perform them without even thinking
- moderate: causes your heart rate and breathing to accelerate but still allows for comfortable conversation.
- Vigorous: elevates your heart rate considerably and has other physical effect that improve your fitness level. Breathing too heavy to have a conversation

Light	Moderate	Vigorous
Walking slowly	Walking briskly	Walking briskly uphill
Routine tasks: • Cooking • Shopping	Cycling moderately on level terrain	Cycling on steep uphill terrain
Light housework: • Ironing • Dusting • Washing dishes	Social dancing	Heavy housework: • Moving furniture • Carrying heavy objects upstairs
Light yardwork or home activities: • Pruning • Weeding • Plumbing	Moderate housework: • Scrubbing floors • Washing windows	Vigorous yardwork or home activities: • Shovelling snow • Trimming trees • Doing construction work • Digging
Light fitness activities: • Light stretching or warm-up • Swimming, slow treading	Moderate yardwork or home activities: • Planting • Raking • Painting • Washing car	Fitness activities requiring vigorous effort: • Running • High-impact aerobics • Circuit weight training • Swimming laps • Most competitive sports
	Fitness activities requiring moderate effort: • Low-impact aerobics • Frisbee • Swimming • Tennis, doubles	

Increasing physical activity to manage weight:

- More than the regular amount of physical activity if you want to lose weight
    - 45-90 more minutes

Exercising to improve physical fitness:

- people can obtain greater health and wellness benefits by increasing the duration and intensity of physical activity
- need to do vigorous training, moderate is not enough

How much physical activity is enough?

- Amount of activity relates to individual and their goals and their health status
- Others say people should exercise long enough and intensely enough to improve their body's capacity for exercise
- At the very least strive for the 150 minutes recommended
- if your planning to lose weight, start slowly and work your way up to 45-90 minutes per day

Benefits of exercising:

- body is adaptable to our demands; meaning the more we demand of it, the more it can deliver (a.k.a. the more fit we become)
- improved cardiorespiratory functioning:
    - during exercise the cardiorespiratory system, must work harder to meet body's demands for oxygen. Regular endurance improves functioning of the heart and system to carry oxygen to body tissues.
    - Exercise directly benefits health of arteries by keeping them from clogging with plaque
    - Exercise improves sexual function and general vitality
- More efficient metabolism:
    - A more physically fit person can more efficiently generate energy, use carbohydrates and fats for energy, and regulate hormones.
    - Exercise may also protect cells from damage by free radicals and from inflammation caused by high blood pressure or cholesterol, nicotine, or overeating
    - It activates antioxidant enzymes to maintain healthy cells
- Improved body composition
    - Healthy body composition = High percentage of fat free mass
    - By exercising, you increase your daily calorie expenditure, raise metabolic rate, increase muscle mass, reduce premature death

Disease prevention and management

- Cardiovascular disease:
    - Sedimentary lifestyle is one of the 6 risk factors
    - Others are: smoking, abnormal blood fats, high blood pressure, diabetes, and obesity
        - Most of these are grouped together called metabolic syndrome
        - Symptoms include: insulin resistance, high blood pressure, abnormal blood fats, blood clotting abnormalities, type 2 diabetes.
    - Physical inactivity increases chances of getting it by 50-240%
    - Benefit of exercise occurs at moderate levels of activity.
        - Positively affects the risk factors (i.e.: cholesterol)
        - Directly interfered with disease process, lowering the risk for heart disease and stroke.
    - Blood fat levels:
        - Endurance and strength training have positive effects on lipids in blood
        - High concentrations of lipids are linked to heart disease because they can clog arteries and that can cause heart attacks or strokes
        - Cholesterol is carried by lipoproteins which are classified according to size and density.
            - Low density lipoproteins stick to the walls of coronary arteries
            - High density pick up excess cholesterol in the bloodstream and carry it back to the liver for excretion from the body.
            - High LDL and low HDL can increase risk of heart problems
    - High blood pressure:
        - Regular endurance reduces high blood pressure
        - So does strength training
    - Coronary heart disease:
        - Involves blockage of one of the coronary arteries
        - These blood vessels supply the heart with oxygenated blood; when obstructed can cause a heart attack
        - Exercise blocks this process and enhances the function of the cells lining the arteries that help regulate blood flow
    - Stroke
        - Occurs when blood vessel leading to the brain is blocked or ruptures, often same disease that leads to heart attacks

Cancer:

- Proven that exercise reduces chance of cancer
- Decrease colon cancer by speeding up movement of food in the gastro-intestinal tract, lowering blood insulin levels, enhancing immune function, and reducing blood fats

Osteoporosis:

- Strength training builds bone strength
- People with stronger bones have less bone density loss
- With stronger bones and muscles and better balance, less likely to endure falls or bone fractures

- Should also eat a diet that consists of calcium and vitamin D
    - Caution: too much exercise can depress levels of estrogen, leading to bone loss

Type 2 diabetes:

- Exercise prevents development of type 2 diabetes by burning excess sugar and makes the cells more sensitive to insulin
    - Also keeps the body fat at healthy levels (obesity is a risk factor for this)

Improved psychological and emotional wellness:

- Reduced stress:
    - physically fit people respond better to stress (experience milder responses)
- Reduced anxiety or depression:
    - sedimentary people tend to feel more fatigue and depression. Exercise improves mood
- improves self-image:
    - provides proof of skill and self-control, thus enhancing your self concept. Exercise increasing self-worth
- learning and memory:
    - exercise enhances the formation and survival of new nerve cells and the connections between nerves
- enjoyment:
    - exercise is fun an good way to interact with other people

improve immune function:

- moderate endurance boosts immune function, whereas excessive training depresses it
- physically fit people get fewer colds

prevention of injuries and low back pain:

- increased muscle strength provides protection and helps maintain good posture and appropriate body mechanics when carrying out everyday activities
- good muscle endurance in the abdomen, hips, lower back and legs supports the back back in proper alignment and helps prevent lower back pain

improved wellness for life:

- exercising regularly may be the single most important thing you can do

exercising with special health problems:

- asthma:
    - carry medication during workouts and avoid exercising alone
    - exercise regularly, and warm up and cool down
    - choose self-paced endurance programs
    - avoid things that may trigger attacks
- diabetes:
    - wear medical bracelet
    - when injecting insulin, inject it to muscle that wont be exercised at least an hour before
    - check blood sugar before, during, and after
    - check your skin regularly for blisters

- obesity:
    - begin slowly
    - exercise moderately at least 60 minutes a day
    - at first choose non-weight bearing activities
    - stay alert for symptoms of heat-related problems
    - include strength training
- heart disease and hypertension:
    - exercise moderately rather than intensely
    - increase frequency, intensity, and time gradually
    - don't hold your breath while exercising- could cause steep increase in blood pressure
    - discuss the effect of medication- some could affect heart rate
- arthritis:
    - begin exercising as soon as possible
    - avoid high impact activities
    - in strength training pay special attention to muscles that support and protect affected joints, add weight gradually
    - preform flexibility exercises regularly
- osteoporosis:
    - choose low-impact, weight bearing activities to help maintain bone density
    - avoid movement that stresses the back or carries a risk of falling
    - weight train to improve strength and balance and reduce the risk of falling

First steps of exercise program:

- medical clearance
- basic principles f physical training
    - specificity
    - progressive overload
        - fitness is improved when we demand more of the body
        - balance between asking too much or too little
        - depends on:
            - frequency
            - intensity
            - time
            - type/mode of activity
    - rest and recuperation
        - if we don't take brakes and work too hard it can lead to injuries
    - reversibility
        - exercise frequently to avoid losing what you've gained
    - individual differences
        - individual limits and goals
- selecting activities

cardiorespiratory endurance activities:

- stress a large portion of the body's muscle mass for a prolonged time

    - ex: walking, jogging, swimming, etc.
- frequency:
    - 3-5 days a week
- intensity:
    - goal is to increasing the body's cardiorespiration capacity
        - increase maximum oxygen consumption
    - to determine exactly how intense you should work, measure heart rate:
        - should exercise your maximum heart rate before exhaustion to improve this
        - target heart rate
    - at first you may improve a lot and then it plateaus
- time:
    - 20-60 min recommended
- warm up and cool down
    - warming up enhances performance and spreads synovial fluid throughout the joints
    - cooling after exercise in important to restore the body's circulation

developing muscular strength and endurance:

- types of strength training:
    - resistance training
        - use weights, exercise machines, or body weight
        - to increase muscle strength
    - isomeric (static) exercise
        - valuable for toning and strengthening muscles
        - do not require equipment
    - isotonic (dynamic) exercise:
        - increases muscle strength that can be applied towards other forms of physical activity
- choosing equipment
    - free weights require more care, coordination and balance. Need a spotter
    - weight machines are easier to use, safe, convenient, easy to isolate and work on specific muscles
- choosing exercises:
- frequency:
    - 2 non-consecutive days a week
- intensity and time:
    - number of repetitions is equal to time
    - weight you lift is equal to intensity
    - in general, heavy weight low repetitions, and vice versa

A caution about supplements:

- supplements that guarantee quick fix are often dangerous, don't work, or expensive
- over the counter supplements are regulated, but long term affects are unknown

Gender differences in muscle strength

- men are only 1-2% stronger in upper body and equally as strong than women in the lower portion of the body when comparing unit for unit
- individual muscle cells are larger in men
- 2 factors that help men are testosterone and speed of nervous control of muscle
- women have a greater concern of losing muscle mass rather than gaining- its harder for them to bulk up like men do
- men start off with more muscle

Flexibility training:

- proper stretching techniques
- frequency:
    - at least 2-3 times per week
- intensity and time:
    - hold position for 15-30 s , rest for 30-60s , repeat and try to go further
    - complete workout should take 20-30 minutes
    - intensity should increase over time

Eating and drinking for exercise

- eat a well- balanced diet
- drink enough water to sustain many chemical reactions
- serious dehydration can lead to reduced blood volume, accelerated heart rate, elevated body temp., etc.
- drink half a litre before workout and continue drinking during

managing fitness program:

- start slowly and gradually
- be consistent
- asses your fitness
- preventing and managing injuries
    - for minor: rest, ice, compress, elevate (RICE)
    - for major seek medical attention
    -

Definition

Physical fitness: the body's ability to respond or adapt to the demands of stress of physical effort

Health-related fitness: physical capabilities that contribute to health, including cardiorespiratory endurance muscular strength, muscular endurance, flexibility, and body composition
Cardiorespiratory endurance: the ability of the body to perform prolonged, large muscle. Dynamic exercise at moderate to high levels of intensity
Endurance training: exercised intended specifically to improve cardiorespiratory endurance; usually involves prolonged, large-muscle, dynamic exercise
Muscle strength: the amount of force a muscle can produce with a single maximum effort
Muscle endurance: the ability of a muscle or group of muscles to remain contracted or to contract repeatedly for a long time
Flexibility: the ability to move joints through their full range of motion
Body composition: the proportion of fat and fat-free mass in the body
Fat free mass: mom-fat component of the human body, consisting of skeletal muscle, bone, and water
Skill-related fitness: physical abilities that contribute to perform in a sport or activity, including speed, power, agility, balance, coordination, and reaction time
Physical activity: any movement of the body carried out by the skeletal muscles and requiring energy
Exercise: planned, structured, repetitive movements of the body intended to improve or maintain physical fitness
EKG: a recording of the electrical activity in the heart
Overload: the amount of stress placed on the body; a gradual increase in the amount of overload cases adaptations that improve fitness
Reversibility: the training principle that fitness improvements are lost when demands on the body are lowered
Maximal oxygen consumption: the body's maximum ability to transport and use oxygen
Target heart rate range: the range of heart rates within which exercise yields the cardiovascular benefits
Synovial fluid: fluid found within many joints that provides lubrication and nutrition to the cells of the joint surface
Resistance exercise: activates that forxe muscles to contract against increased resistance; a.k.a. strength training
Isometric (static) exercise: the application of force without movement
Isotonic (dynamic) exercise: the application of force with movement
Cross training: participating in 2 or more activities to develop a particular component of fitness

Quick stats

- physical inactivity is one of the top five global risk factors for mortality and is estimated to cause 2 million deaths per year

- physical inactivity contributes to more than 21000 premature deaths in Canada each year and about $2.4 billion in direct and $4.3 billion in indirect costs
- only 13% of Canadians 60-70 get enough physical activity in a week to meet Canadian guidelines
- 85% of Canadian adults are not active enough for health benefits
- Canadians with obesity get about half as many minutes of physical activity each day as their non-obese counterparts (19 minutes compared to 34 minutes)
- Diabetes is a contributing factor in more than 41000 Canadians deaths each year
- Only 22% of Canadians provide daily physical education
- Throughout Canada, 51 YMCA; s serve 2 million Canadians in mire than 1000 communities across the country
- 5-10 min if warming up and cooling down is adequate for a 30 min workout of brisk walking
- as many as 25% of dietary supplements around the world contain substances that would cause an athlete to fail a drug test
- more than 6200 fitness facilities in Canada serve more than 5 million members

Chapter 7

Exercise and Leisure

- CVD is diagnosed in 1.3 million Canadians and strokes can take one life every 8 minutes
- Heart attacks and strokes are the second and third leading causes of death in Canada
- Though CVD typically affects men and older adults, heart attacks is the number 2 killer of Canadian women (second to cancer)
- Fatality in heart attacks increases for those 45-64
- CVD is largely due to our way of life
    - Unhealthy eating, obesity, smoking, high stress, high blood pressure and cholesterol, etc.
- Not all risk factors are controllable (ex: older you are, more likely you could be affected)

The cardiovascular system:

- The heart
    - 4-chambered, fist size located beneath the breastbone
    - pumps deoxygenated blood to lungs (pulmonary circulation- right side) and delivers oxygenated blood to the rest of the body (systemic system- left side)
- steps involved:
    1. oxygen poor blood travels through large vesicles, called vena cavae, into the heart's right upper chamber (atrium)
    2. after the right atrium fills, it contracts and pumps blood into the heart's right lower chamber (ventricle)

3. when the right ventricle is full, it contracts and pumps blood through the pulmonary artery into the lungs
4. in the lungs, the blood picks up oxygen and discards carbon dioxide
5. the cleaned, oxygenated blood flows from the lings through the pulmonary veins into the heart's left atrium
6. after the left atrium fills, it contracts and pumps blood into the left ventricle
7. when the left ventricle is full, it pumps blood through the aorta- the body's largest artery- for distribution to the rest of the body's blood vesicles

- period of heart's contraction is called a systole
    1. atria contracts first, pumping blood into the ventricles
    2. ventricles contract, pumping blood to the lungs and the body
- period of relaxation is called a diastole
    1. blood flows to the heart
- blood pressure= the force exerted on the walls of the blood vesicles
    - created by pumping action of the heart
    - greater during systole than diastole
- heartbeat is controlled by nerve impulses
    - produced at steady rate unless acting in response to stimuli

The blood vessels:

- classified by size and function
- veins carry blood to heart
- arteries carry blood AWAY from the heart
- capillaries are tiny vessils that's deliver oxygen and nutrient rich blood to other tissues and pick up oxygen-poor blood.
    - From the capillaries, the blood empties into small veins then into larger veins that return it to the heart to repeat the cycle
- The heart has its own network of veins and capillaries
    - 2 larger vessels- coronary arteries- branch off the aorta and supply the heart muscle with oxygenated blood. Blood cloths here cause heart attacks

Risk factors

- major risk factors that can be changed:
- Tabaco use
    - People who smoke a pack of cigarettes a day are twice as likely to get a heart attack, 2 packs ➔ triple as likely
    - When smokers do have heart attacks, they are 60-80 percent as likely to die from it
    - Smoking harms the system by:
        - It damages the lining of arteries
        - Reduces level of high density lipoproteins and good cholesterol
        - It raises levels of triglycerides and LDL (bad cholesterol)
        - Nicotine increases blood pressure and heart rate
        - The carbon monoxide in cigarette smoke displaces oxygen in blood, reducing the oxygen available to the body

        - Smoking causes platelets to stick together in the blood stream, causing clotting
        - It speeds up development of fatty deposits in the arteries
- High blood pressure:
    - A.K.A hypertension
    - Short periods of high blood pressure is normal
    - Measured with stethoscope
    - Expressed with 2 numbers (ex: 120 over 80) and in ml of mercury
        - First number is systolic blood pressure and second is diastolic
    - CVD risk is increased when blood pressire is over 120/ 80
        - Normal: 120-129/80-84
        - High-normal: 130-139/85-89
        - High: 140/90
    - **Causes**: increased output of blood by heart or increased resistance to blood flow in the arteries (caused by constriction of smooth muscle surrounding arteries or atherosclerosis: a disease that causes arteries to become clogged and narrow). High blood pressure also scars and hardens arteries making them less elastic which increases blood pressure
    - **Health risks:** no symptoms, but it is damaging organs and increasing risk of heart attack
    - **Prevalence:** 20% f Canadians have hypertension but only 66% have it controlled
        - An additional 20% have prehypertension
        - Women sometimes develop it during pregnancy
        - Common in women taking birth control
        - Higher rates in aboriginal, African and south Asian descent
    - Treatment: cant be cured but can be handled
        - Self monitor/test
        - Lifestyle changes: reach healthy weight, exercise, healthy diet, eat less salt, stop smoking, etc.
        - In extreme cases take medication
- High cholesterol
    - Excess cholesterol can clog arteries
    - Should get your cholesterol checked
    - Benefits of controlling cholesterol: Can cut risk of geart attack by 2% ri4 every 1% reduce total cholesterol
- Physical inactivity
    - Exercise lowers heart rate and blood pressure and increases HDL
- Obesity:
    - As weight increases, risk increases
    - Endothelial cells: cells lining the inside of arteries; they help regulate blood flow and prevent platelets from sticking
    - Hypertrophy: abnormal enlargement of an organ secondary to an increase in cell size

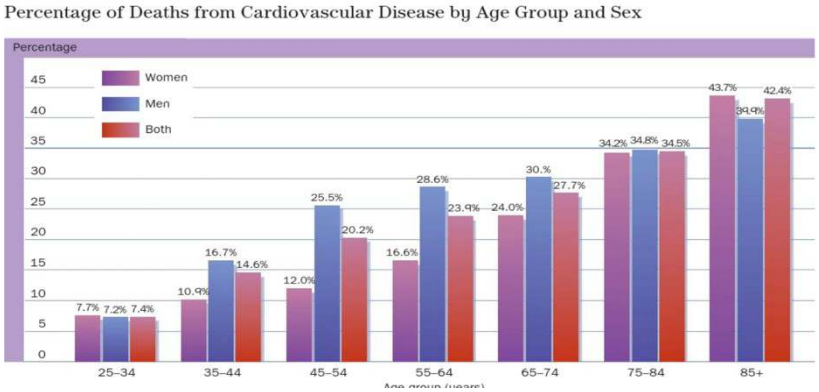
- Diabetes:
    - Increases risk 2-4 times
    - Estimated loss of life by 5-10 years

Contributing factors that can be changed:

- High triglyceride levels
    - Stop smoking, lose weight, exercise, etc,
- Physiological and social factors
    - Stress: excessive stress can strain the heart an blood levels over time. It elevates heart rate and blood pressure. If you are healthy you can manage it but if you already have CVD it can be dangerous
    - Chronic hostility and anger: men prone to anger are 2-3x more likely to get a heart attack
    - Supressing psychological distress:
        - Supressing anger may be hazardous to the heart. Tend to have higher stress levels
    - Depression:
    - Anxiety:
    - Social isolation
    - Low socioeconomic status
    - Alcohol and drugs

Major risk factors that can't be changed:

- Hereditary
- Aging
- Ethnicity
- inflammation and c-reactive protein



gender matters:

- estrogen protects against CVD
- shouldn't take menopausal supplement as it increases risk
- when women have heart attacks more likely to die within a year➔ because women develop heart disease at older ages
- women's' symptoms of heart attack are different than men's

possible risk factors currently being studied:

- insulin resistance and metabolic syndrome
- homocysteine
    - amino acid that appears to damage the lining of blood cells resulting in inflammation and development of fatty acid deposits
- infectious agents
- lipoprotein a (LDL)
- LDL particle sixe
- Blood viscosity and iron
- Uric acid
- Time of day and time of year

Major forms of heart disease

- Atherosclerosis
    - Thickening and hardening of the arteries
    - Narrowed by fat deposits
    - It this results in lack of oxygen to brain or heart it could be deadly
    - Main risk factors: smoking, physical inactivity, high cholesteral and blood pressure and diabetes
    - Starts in childhood
- Heart disease and heart attack
    - Arteries become blocked and heart muscle is damaged and may die from lack of blood
    - Symptoms:
        - Chest pain/pressure
        - Arm/neck/shoulder/back pain
        - Difficulty breathing
        - Excessive sweating, cool clammy hands
        - Nausea
        - Loss of consciousness
        - Fear, anxiety, denial
- Angina
    - Arteries are narrow, but open enough to deliver blood to heqty
    - When needs pf oxygen exceeds what it can supply, called angina pectoris: pain in chest, often left shoulder
- Arrhythmia: change in the normal pattern of the heart

- Sudden cardiac arrest: a non-traumatic, unexpected death from sudden cardiac arrest, most often from arrhythmia; most often they have underlying heart disease

Helping a Person having a Heart attack

- Half of the people who die from heat attacks die within an hour of the first symptom
    - Most people wait to get help, and die before they even get to the hospital
- Get the person help even if they deny anything is wrong
- Person having the heart attack should have 1 adult aspirin
- If they go unconscious, immediately someone who is qualified to do CPR should start administering it

Detecting and treating Heart disease:

- Initial screening tool is stress exercise in which patients go on the treadmill while hooked up to an EKG
- Certain characteristics about in their heart's activity could reveal heart issues
- As well pictures of the heart could help pinpoint problems (such as MRI)
- If the tests reveal that there may be a problem, usually do an angiogram next:
    - A small catheter (small tube) is threaded into an artery to the coronary artery. Dye is then injected and can be seen moving through the body using an X-ray.
    - If the problem is found it is treated with a balloon angioplasty:
        - Small wire placed into the artery and feeding a deflated balloon in the site that's narrow and then inflating it and flattening the inflated areas
- Repeated clogging could be treated with medication and in extreme cases surgery
- People at high risk are recommended to take 1 aspirin tablet a day
    - Coronary bypass surgery: a vein is grafted from a point above to a point below an obstruction in a coronary artery, improving the blood supply to the heart.
    -

What to do in case of a heart attack, stroke, or cardiac arrest:

- Heart attack warning signs:
    - Chest discomfort or other parts of the upper body
    - Shortness of breath
    - Sweating
    - Nausea
    - Light headedness
- Call 911 if you have these symptoms, as well sit or lie down
- Stroke warning signs:
    - Sudden numbness or face, arm or leg
    - Sudden confusion or trouble speaking or understanding
    - Sudden trouble seeing
    - Sudden severe headache with no cause
- Take immediate action to call 911
- Signs of cardiac arrest:
    - Sudden loss of responsiveness
    - No normal breathing

    - No signs of circulation
- Call 911 and begin CPR immediately
- Be prepared:
    - 30% higher chance of survival if CPR is started immediately
    - more than 8-% of attacks happen at home

Stroke

- occurs when blood supply to the brain is cut off
- prompt treatment of a stroke could greatly reduce permanent effects
- **ischemic stroke**: caused by blockage in a blood cell. 2 types:
    - thrombotic stroke: blood clot forms in a cerebral artery that has been narrowed or damaged
    - embolic stroke: caused by embolus (wandering blood clot)- linked to abnormal heart rhythm. A pool of blood may pool in an atrium and form a clot
    - these strokes account for 80% of all strokes and can be treated with anti-clotting drugs
- Hemorrhagic stroke: occurs when blood vessel in brain bursts and blood pools everywhere, increasing the pressure on the brain tissue. 2 types:
    - Intracerebral hemorrhage: blood vessel rupture within the brain
    - Subarachnoid hemorrhage: blood vessel of brain's surface that ruptures and bleeds into the space between the brain and the skull
    - Can be caused by head injuries or aneurysms (blood filled pocket that bulges out from a weak spot in the artery wall.
- Effects of a stroke:
    - Interruption of blood supply to the brain and prevent nerves from functioning
    - May cause paralysis, disability walking, speech impairments, changes in behaviour
        - Depends on which nerves have been damaged
- Detecting and treating strokes
    - Requires prompt diagnosis
    - "silent strokes" aren't noticeable but if you've had one your more liklet to get a more serious stroke later on
    - TIA (mini-strokes) before they experience a full blown one.
        - Similar symptoms
    - Person who experiences strokes should be rushed to the hospital and get a CT scan to yell which type of stroke it is
        - Treated accordingly to which stroke they have
            - For blood clots: remove plaque
            - For cerebral hemorrhage: reduce blood pressure
            - For strokes that are too late, rehabilitation is the only treatment

Other forms of heart disease:

- Congenital heart defects: malformation of the heart; since birth
    - Treated with medication or surgery
    - Defect causes the heart to produce a distinctive sound

- Coarctation of the aorta: narrowing constriction of the aorta. Repair with surgery
- Hypertrophic cardiomyopathy: inherited condition where there is an enlargement of the heart muscle, epically between the 2 ventricles. Remove with surgery
    - May be identified by a murmur
    - Treat with pacemaker or defibrillator
- Rheumatic heart disease: mainly in children, characterized by fever, inflammation, pai in joints, etc.
    - Bit cab permanently damage the heart muscle and heart valves
- Heart valve disorder:
    - Valves fail to open or close completely
    - May need surgery of valve replacement
    - Most common: mitral valve prolapse➔ mitral calve billows out during contraction, possible allowing leakage of blood from left ventricle into left atrium

Eat heart healthy:

- Decrease cholesterol intake
- Eat high-fibre diet
- Reduce sodium
- Avoid excess alcohol
- Eat foods rich in omega-3
- Eat:
    - plant stanols and sterols: helps lower LDL
    - folic acid, vitamin B-6 and b12: lower homocysteine levels and reduce risk of hypertension
    - Calcium: prevent hypertension
    - Soy protein: lowers LDL compared to meat protein
    - Healthy carbs: good to fight insulin resistance
    - Reduce total calories to manage weight and improve cholesterol

- Exercise regularly
- Avoid tobacco
- Know and manage your blood pressure
- Know and manage your cholesterol levels
- Manage your stress and anger effectively
-

Definitions:

CVD: the collective term for various diseases of the heart and blood vessels

Cardiovascular system: the system that circulates blood through the body; consists of the heart and blood vessels

Pulmonary circulation: the part the circulatory system governs governed by the right side of the heart; the circulation of blood between the heart and the lungs

Systematic circulation: the part of the circulatory system governed by the left side of the heart; the circulation of blood between the heart and the rest of the body
Vena cava: either of two large veins through which blood is returned to the right atrium of the heart
Atrium: the 2 upper champers of the heart in which blood collects before passing to the atriums
Ventricle: the 2 lower chambers of the heart that pumps blood through arteries to the lungs and other parts of the body
Aorta: the large artery that receives blood from the left ventricle and distributes it to the body

Quick stats:

- more than 90% of Canadians with hypertension have other cardiovascular risks as well
- about 17% of Canadians with high blood pressure are not aware of their condition
- about 40% of Canadians have high blood cholesterol
- first nations adults with diabetes are 4 times as likely to have heart disease as their counterparts
- heart disease patients who also have anxiety are 2 times as likely to die from any cause than are those who don't struggle with anxiety
- CVD accounts for more than 15% of all hospitalizations in Canada each year
- The estimated annual financial burden of CVD in Canada is about $21 billion in physician services, other hospital costs, lost wages, and reduced productivity
- CAD is responsible for 65-80% of deaths among people with diabetes
- 50,000 Canadians have strokes each year- about 1 every 10 minutes
- Although most Canadians recognize at least one sign of a stroke, over 1/3 would not likely call 911 of they sae those signs in someone they know
- 165 heart transplants are performed in Canada annually
- A stroke survivor has a 20% chance of having another stroke within 2 years
-