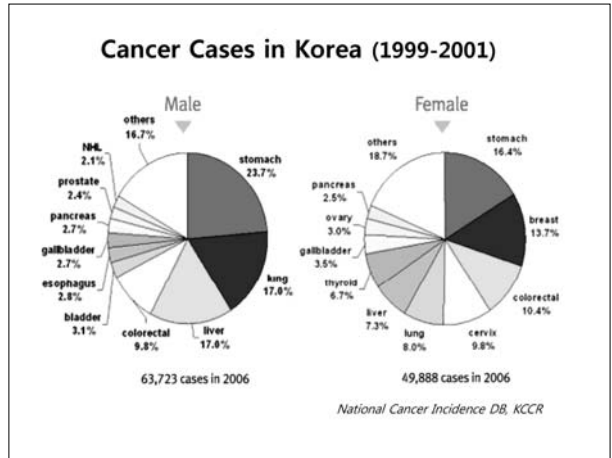
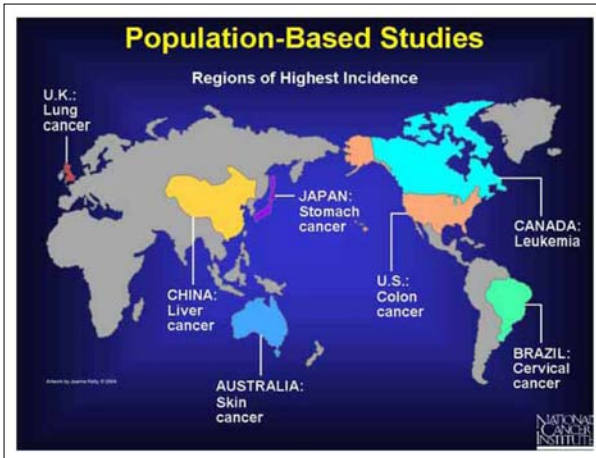
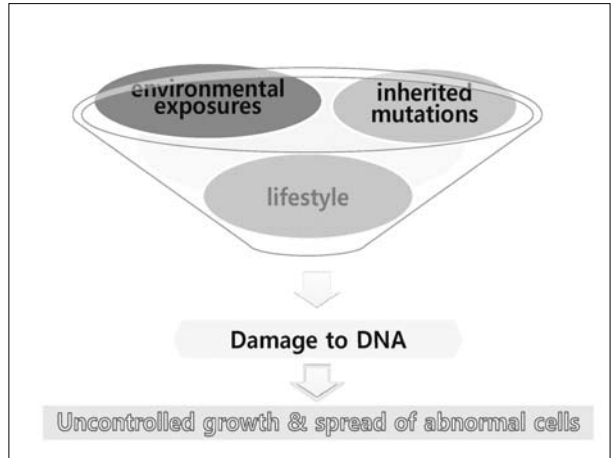
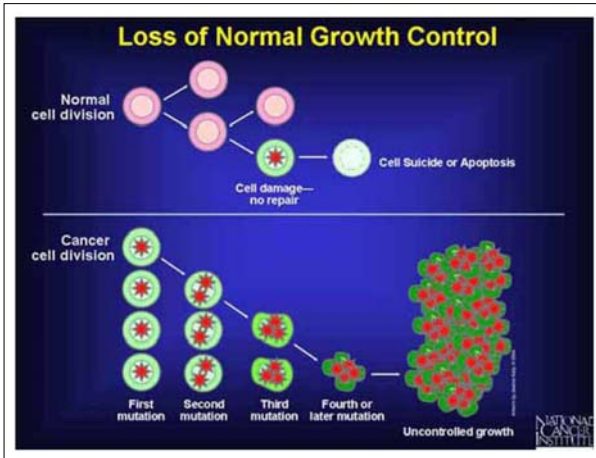


세미나 II : 운동과 질병

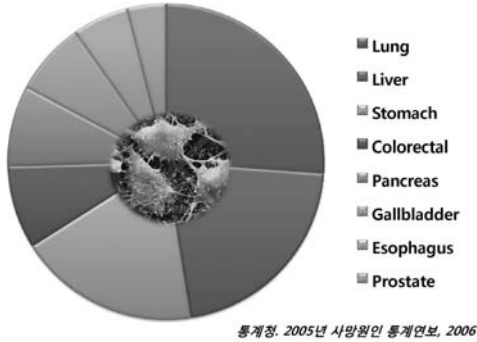
EXERCISE FOR PATIENTS WITH CANCER

강 현 주
순천향대

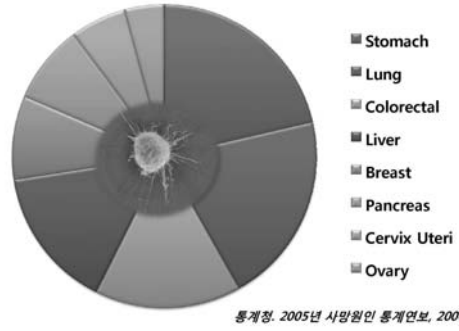




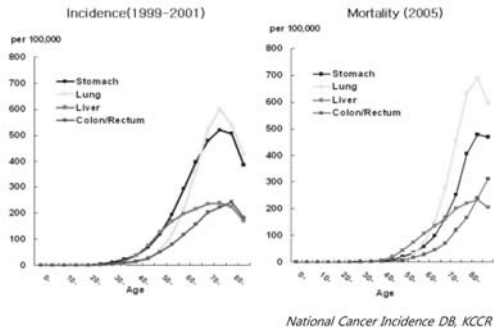
Cancer Mortality in Korea (male)



Cancer Mortality in Korea (female)



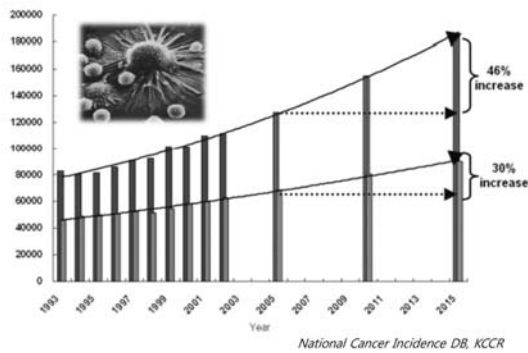
Age-specific Cancer Incidence and Death Rate of Major Cancers (male)



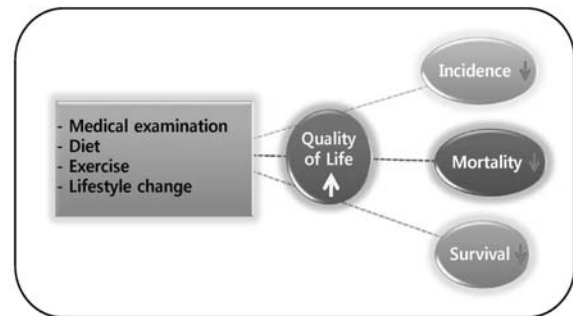
Age-specific Cancer Incidence and Death Rate of Major Cancers (female)



Estimation of Cancer Cases & Deaths



Strategies for Cancer Control





Exercise Testing and Training(1)		
	Contraindication	Precautions
Factors related to cancer treatment	<ul style="list-style-type: none"> No ex. on days of intravenous chemotherapy or within 24h of treatment No ex. before blood draw Severe tissue reaction to radiation therapy 	<ul style="list-style-type: none"> Caution if on treatments that affect the lungs & heart: recommend medically supervised exercise testing & training Mouth sores/ulcerations: avoid mouthpieces for maximal testing use face masks
Hematologic	<ul style="list-style-type: none"> Platelets < 50,000 WBCs < 3,000 Hb < 10g/dl 	<ul style="list-style-type: none"> Platelets > 50,000-150,000: avoid tests that increase risk of bleeding WBCs > 3,000-4,000: ensure proper sterilization of equipment Hb > 10g/dl-11.5/13.5g/dl caution with maximal tests

Exercise Testing and Training(2)		
	Contraindication	Precautions
Musculoskeletal	<ul style="list-style-type: none"> Bone, back or neck pain of recent origin Unusual muscular weakness Severe cachexia Unusual/extreme fatigue Poor functional status: avoid ex. testing if Karnofsky performance status score ≤ 60% 	<ul style="list-style-type: none"> Any pain or cramping: investigate Osteopenia: avoid high impact ex. if risk of fracture Steroid-induced myopathy Cachexia: multidisciplinary approach to ex. Mild to moderate fatigue: closely monitor response to ex.
Systemic	<ul style="list-style-type: none"> Acute infections Febrile illness: fever > 38°C General malaise 	<ul style="list-style-type: none"> Recent systemic illness or infection: avoid ex. until asymptomatic for > 48h

Exercise Testing and Training(3)		
	Contraindication	Precautions
Gastro-intestinal	<ul style="list-style-type: none"> Severe nausea Vomiting or diarrhea within 24h-36h Dehydration Poor nutrition: inadequate fluid and intake 	<ul style="list-style-type: none"> Compromised fluid and food intake: recommend multidisciplinary approach/consultation with nutritionist
Cardio-vascular	<ul style="list-style-type: none"> Chest pain Resting HR > 100 or < 50bpm Resting SBP > 145mmHg or DBP > 95mmHg Resting SBP < 85mmHg Irregular HR Swelling of ankles 	<ul style="list-style-type: none"> Caution if at risk of cardiac disease: recommend medically supervised ex. testing & training If on antihypertensive medications that affect HR, THR may not be attainable; avoid overexertion Lymphedema: wear compression garment on limb when exercising

Exercise Testing and Training(4)		
	Contraindication	Precautions
Pulmonary	<ul style="list-style-type: none"> Severe dyspnea Cough, wheezing Chest pain increased by deep breath 	<ul style="list-style-type: none"> Mild to moderate dyspnea avoid maximal tests
Neurologic	<ul style="list-style-type: none"> Significant decline in cognitive status Dizziness/light-headedness Disorientation Blurred vision Ataxia 	<ul style="list-style-type: none"> Mild cognitive changes: ensure that patient is able to understand & follow instructions Poor balance/peripheral sensory neuropathy: use well-supported positions for exercise

Exercise Prescription	
Frequency	<ul style="list-style-type: none"> Aerobic ex.- 3-5d/wk, Resistance ex.- 2-3d/wk, Flexibility ex.- 2-7d/wk
Intensity	<ul style="list-style-type: none"> Aerobic ex.- 40-<60% VO2R or HRR, Resistance ex.- 40-60% 1RM, Flexibility ex.- slow static stretching to the point of tension
Time	<ul style="list-style-type: none"> Aerobic ex.- 20-60min/d, Resistance ex.- 1-3sets of 8-12reps, Flexibility ex.- 4reps of 10-30secs
Type	<ul style="list-style-type: none"> Aerobic ex.- prolonged, rhythmic activities using large muscle groups, Resistance ex.- weights, resistance machines, or weight-bearing functional tasks targeting all major muscle groups, Flexibility ex.- stretching or ROM ex. of all major muscle groups

Special Consideration(con)
<ul style="list-style-type: none"> Cancer-related fatigue is prevalent in patients receiving chemotherapy & radiation & may prevent or restrict the ability to ex. Bone is a common site of metastases in many cancers, particularly breast, prostate, & lung cancer. High-impact activities & contact sports should be avoided to minimize fracture risk. Cachexia or muscle wasting is prevalent in individuals with incurable cancer & likely to limit the ex., depending on the extent of muscle wasting.



Special Consideration

- Patients who have received bone-marrow transplants & those with low WBC counts should be avoid exercising in public places that have high risk of microbial contamination.
- Swimming should not be prescribed for patients with indwelling catheters or central lines and feeding tubes, or for those who are receiving radiation.
- Patients receiving chemotherapy may experience fluctuating periods of sickness & fatigue during treatment cycles that require frequent modifications to ex. prescription, such as reducing the intensity and duration of the ex. session.