Age-Related Changes to the Human Body

July 14th, 2018.

Iyke Anaba
• Introduction
• Degenerative changes – musculoskeletal
• Degenerative changes – neuromuscular
• Other age-related changes
• Sample questions
PREPARATION TIPS

• Arrive early.

• Dress comfortably.

• Be mindful of the exam sections and plan your breaks in advance.

• Mark difficult questions and come back to them later when you have answered the other questions in the section.

• Always observe the test centre rules and regulations and do not even attempt to cheat.
The fight is won or lost far away from witnesses - behind the lines, in the gym and out there on the road, long before I dance under those lights.

Muhammad Ali  After winning Olympic light-heavyweight gold medal at the 1960 Games in Rome.
The weight-bearing bones and the movable joints degenerate with age.

The most common age-related bone/joint conditions are: Osteopenia, Osteoporosis, Primary Osteoarthritis (OA). See; Rheumatoid arthritis (RA), Gout, Pseudogout.
Arthritis

- Osteoarthritis is the most common form of arthritis. It occurs when the protective cartilage on the ends of bones wears down over time. OA gradually worsens with time and no cure exists. Treatments can slow the progression of the disease, relieve pain and improve joint function.

- Rheumatoid arthritis is a chronic inflammatory disorder that typically affects the small joints in the hands and feet. RA affects the lining of joints, causing a painful swelling that can eventually result in bone erosion and joint deformity.
<table>
<thead>
<tr>
<th>CONDITION</th>
<th>DEFINITION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Osteopenia</strong></td>
<td>The protein and mineral content of bone tissue is reduced but less severely than in osteoporosis. It is usually the precursor for osteoporosis.</td>
</tr>
<tr>
<td><strong>Osteoporosis</strong></td>
<td>The bones become brittle and fragile typically as a result of hormonal changes or deficiency of calcium or vitamin D.</td>
</tr>
</tbody>
</table>
| **Primary Osteoarthritis (POA)** | Primary osteoarthritis is related to aging and typically occurs in older individuals. POA is idiopathic i.e. occurs in previously intact joints, with no apparent initiating factor.  
  Secondary osteoarthritis (SOA) refers to degenerative disease of the synovial joints that results from some predisposing condition, *usually trauma*, that has adversely altered the articular cartilage and/or subchondral bone of the affected joints. It often occurs in relatively young individuals. |
| **Gout and Pseudogout**          | A disease in which defective metabolism of uric acid causes arthritis especially in the small bones of the feet often with episodes of acute pain. Pseudogout is an Inflammation of the joints caused by deposits of calcium pyrophosphate crystals resulting in arthritis. |
Question 1

A PT works with a home care health agency and reviews the health records of a few of the patients. The following disease conditions are caused by (or display) an induration of body tissues / organs except ; (30 secs)

a) Osteomalacia
b) Multiple sclerosis
c) Primary osteoarthritis
d) Liver cirrhosis
Question 1

A PT works with a home care health agency and reviews the health records of a few of the patients. The following disease conditions are caused by (or display) an induration of body tissues / organs except:

- a) Osteomalacia
- b) Multiple sclerosis
- c) Primary osteoarthritis
- d) Liver cirrhosis
Question 1. Musculoskeletal. FDP (Foundations for diagnosis). Lev 1

Option A is the correct answer.

Induration means 'hardening'. Osteomalacia is a progressive disease in which lack of mineralization of new bone matrix results in a softening of bone without loss of the present bone matrix.

A PT works with a home care health agency and reviews the health records of a few of the patients. The following disease conditions are caused by (or display) an induration of body tissues / organs except:

a) Osteomalacia  

b) Multiple sclerosis ✗  

*Multiple sclerosis is characterized by intermittent damage to myelin (demyelination). Demyelination causes scarring and *hardening* (*sclerosis*) of nerve tissue in the spinal cord, brain and optic nerves.*  

c) Primary osteoarthritis  

d) Liver cirrhosis
Question 1

A PT works with a home care health agency and reviews the health records of a few of the patients. The following disease conditions are caused by (or display) an induration of body tissues / organs except:

a) Osteomalacia
b) Multiple sclerosis
c) Primary osteoarthritis X

Primary osteoarthritis is caused by age. Osteoarthritis can be identified on radiographs by a sclerosis (hardening) of the subchondral bone.

d) Liver cirrhosis
A PT works with a home care health agency and reviews the health records of a few of the patients. The following disease conditions are caused by (or display) an induration of body tissues / organs except:

a) Osteomalacia
b) Multiple sclerosis
c) Primary osteoarthritis
d) Liver cirrhosis  X

Cirrhosis is an abnormal liver condition in which there is irreversible scarring, shrinking and hardening of the liver.

http://www.healthline.com/health/cirrhosis#Overview1
SWAN NECKS AND BUTTONHOLES

(Musculoskeletal. FDP. OA/RA deformities)

• **Boutonnière deformity** can manifest itself acutely after trauma, but most are a result of progressive arthritis. The proximal interphalangeal (PIP) joint of the finger is flexed, and the distal interphalangeal (DIP) joint is hyperexteended.

• **Swan neck deformity** is a deformity of the digits that consists of hyperextension of the PIP joints and compensatory flexion of the distal interphalangeal DIP joints. It is classically associated with Rheumatoid Arthritis.
Question 2

A 49 year old woman presents for PT management with pain and slight swelling of her right hand. Upon screening, she indicates that her ordeal began following a ‘rather enthusiastic handshake’ from a male co-worker the previous week. Her T-score from a BMD (Bone Mineral Density) test was -2.0. Other investigative and diagnostic tests showed no untoward results. Radiographic investigations were therefore requested by the PT. This test result best describes;

a) Osteopetrosis
b) Osteoporosis
c) Osteopenia
d) Osteomyelitis
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a) Osteopetrosis
b) Osteoporosis
c) Osteopenia

Osteopenia is generally considered to be a precursor to osteoporosis. However, not every diagnosis of osteopenia will develop into osteoporosis. Osteopenia is defined as a bone mineral density T-score between -1.0 and -2.5.

d) Osteomyelitis
Option c is the correct answer.

Bone density test results are reported either as T-scores or Z-scores. **T-scores** are the number of standard deviations (SD) above or below the average of what is normally expected in a healthy young adult of the same sex to which the referenced bone density score is compared with. -1 and above is considered normal while -2.5 and below indicates likely osteoporosis.

**Z-scores** are the number of SDs above or below what's normally expected for someone of comparable age, sex, weight, and ethnic or racial origin. Z-scores of -2 or lower may suggest abnormal bone loss not caused by aging. Once the underlying problem can be identified, then the condition can often be treated and the bone loss slowed or stopped.

http://www.mayoclinic.org/tests-procedures/bone-density-test/basics/results/prc-20020254
Question 3

A 59 year old receptionist presents for physical therapy in order to manage persistent low back pain. Physical examination reveals an enhanced concavity of the lumbar spine, a protruding and slack belly as well as a protruding buttocks. Which of the following muscle interventions is the least ideal?

a) Flexibility exercises designed to lengthen the hamstring muscles

b) Strengthening exercises of the abdominal muscles

c) Flexibility exercises designed to lengthen the iliopsoas muscles

d) Exercises designed to strengthen the gluteus maximus muscle
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The dominance of sedentary positions in our daily lives tend to place stress on our pelvises causing anterior pelvic stress. Lordosis is a state of exaggerated curvature of the lumbar spine associated with anterior pelvic tilt. In summary, weakening/lengthening of the hip extensors with a concomitant shortening of the hip flexors will result in an anterior pelvic tilt. Interventions are directed towards strengthening/shortening weak/lengthened muscles while lengthening shortened muscles in a bid to make them more flexible. In an anterior pelvic tilt, the hamstrings which also act as back extensors, are already lengthened. Therefore, further lengthening will be the least ideal intervention.

Age-related CNS changes include a reduction in brain size/weight due primarily to a decrease in the volume of the cerebral cortex. There is also a reduction in the number of neurons.

Fatty deposits that gradually accumulate in the walls of cerebral blood vessels (atherosclerosis) reduce the rate of arterial blood flow to the brain increasing the probability of suffering a stroke.
<table>
<thead>
<tr>
<th>CONDITION</th>
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<tbody>
<tr>
<td>Arteriosclerosis</td>
<td>A chronic disease related to aging that is characterized by abnormal thickening and hardening of the arterial walls with resulting loss of elasticity (compare with atherosclerosis).</td>
</tr>
<tr>
<td>Alzheimer’s disease</td>
<td>A progressive mental deterioration that can occur in middle or old age due to generalized degeneration of the brain. It is the commonest cause of premature senility.</td>
</tr>
<tr>
<td>Dementia</td>
<td>A chronic or persistent disorder of the mental processes caused by brain disease or injury and marked by memory disorders (especially short-term memory loss), personality changes, and impaired reasoning. See also memory loss and confusion.</td>
</tr>
<tr>
<td>Parkinson’s disease</td>
<td>A progressive disease of the nervous system marked by tremor, muscular rigidity and slow, imprecise movement, chiefly affecting middle-aged and elderly people. It is associated with degeneration of the basal ganglia of the brain and a deficiency of the neurotransmitter dopamine.</td>
</tr>
</tbody>
</table>
High blood pressure is determined by the amount of blood the heart pumps and the amount of resistance to blood flow in the arteries. The more blood the heart pumps and the narrower the arteries, the higher the blood pressure.

Hypertension generally develops over many years, and it affects nearly everyone eventually. Hypertension if left unchecked increases the risk of serious health problems including heart attack and stroke.
# BLOOD PRESSURE CLASSIFICATION CHART

<table>
<thead>
<tr>
<th>BP CLASSIFICATION</th>
<th>SBP (mmHg)</th>
<th>DBP (mmHg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NORMAL</td>
<td>&lt;120</td>
<td>&lt;80</td>
</tr>
<tr>
<td>PREHYPERTENSION</td>
<td>120 – 139</td>
<td>80 - 89</td>
</tr>
<tr>
<td>STAGE 1 HYPERTENSION</td>
<td>140 – 159</td>
<td>90 - 99</td>
</tr>
<tr>
<td>STAGE 2 HYPERTENSION</td>
<td>≥160</td>
<td>≥100</td>
</tr>
</tbody>
</table>
A PT delivers a presentation on stroke prevention during a community outreach program. The PT addresses the Non-Modifiable Risk Factors (NMRF) of stroke in detail. When considering a hypothetical subject, which of the NMRF poses the greatest stroke risk?

a) Gender (i.e. the subject is female)
b) Hypertension (i.e. the patient's blood pressure is > 165/95mmHg)
c) Age (i.e. the subject is above 55 years of age)
d) Race (i.e. the subject is African-American)
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b) Hypertension (i.e. the patient's blood pressure is > 165/95mmHg)

c) Age (i.e. the subject is above 55 years of age) ✓

d) Race (i.e. the subject is African-American)
...SAYS WHO?
...MICHEAL DON’T COUNT
...SHE’S BEEN 17 FOR THE PAST 17 YEARS!

Option C is the correct answer.

Among the non-modifiable risk factors (age, race, and sex), age constitutes the greatest risk. **The incidence of stroke doubles with every decade after age 55 years.** Approximately 5% of men aged 65 to 69 years have had stroke and the incidence increases to 10% of men aged between 80 to 84 years.

Nevertheless, for strokes in general, the greatest risk factor a stroke is a previous stroke or TIA.

A PT delivers a presentation on stroke prevention during a community outreach program. The PT addresses the Non-Modifiable Risk Factors (NMRF) of stroke in detail. When considering a hypothetical subject, which of the NMRF poses the greatest stroke risk?

a) Gender (i.e. the subject is female) X

Age and not gender poses the greatest stroke risk. Even though women have a 20% less chance of stroke than men but age increases the risk just as with men.

b) Hypertension (i.e. the patient's blood pressure is > 165/95mmHg)

c) Age (i.e. the subject is above 55 years of age)

d) Race (i.e. the subject is African-American)
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a) Gender (i.e. the subject is female)

b) Hypertension (i.e. the patient's blood pressure is > 165/95mmHg) X

Hypertension is a modifiable risk factor (and not a NMRF) for stroke. Nevertheless, hypertension is the most prevalent modifiable risk factor for stroke. Decreasing diastolic blood pressure by 5 to 6 mm Hg decreases risk of stroke by up to 40%.

c) Age (i.e. the subject is above 55 years of age)

d) Race (i.e. the subject is African-American)
Question 4

A PT delivers a presentation on stroke prevention during a community outreach program. The PT addresses the Non-Modifiable Risk Factors (NMRF) of stroke in detail. When considering a hypothetical subject, which of the NMRF poses the greatest stroke risk?

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b) Hypertension (i.e. the patient's blood pressure is > 165/95mmHg)
c) Age (i.e. the subject is above 55 years of age)
d) Race (i.e. the subject is African-American) X

Even though Mexican-American and African-American men have a 50% higher chance of having a stroke than do Caucasian men, it does not pose as great a risk for stroke as age does.
A patient presents with acute contralateral hemiplegic deficits and is eventually diagnosed with an ischemic stroke as a result of an embolic occlusion. Which of the following vessels listed is the most common site of emboli?

a) The proximal internal carotid artery
b) Posterior cerebral artery
c) Middle cerebral artery
d) Anterior cerebral artery
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a) The proximal internal carotid artery
b) Posterior cerebral artery
c) Middle cerebral artery  ✔
d) Anterior cerebral artery

Option C is the correct answer.

The middle cerebral artery (MCA) is the largest branch of the internal carotid artery and is the most common site of emboli. It's deep branches supply the internal capsule and the basal ganglia while on the lateral surface, the branches of the MCA supply the areas of the parietal, frontal and temporal lobes.

The proximal internal carotid artery is the most common site of atherosclerosis and atherothrombosis (not emboli occlusion) leading to stroke.

• Eyesight begins to weaken about age of 40. Hearing also declines with age.

• Common vision problems among older adults include: nearsightedness, *glaucoma*, *cataracts*, diabetic retinopathy (app 4.1 million U.S. adults >40 years), *presbyopia* and macular degeneration (damage to the center of the eye that can result in a loss of central vision).

• About 1/3 of Americans between 65 to 74 have hearing problems. About half the people who are 85 and older have hearing loss.
<table>
<thead>
<tr>
<th>CONDITION</th>
<th>DEFINITION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presbyopia</td>
<td>A slow loss of ability to see close objects or small print and is normally associated with aging. Holding the newspaper at arm's length is a sign of presbyopia.</td>
</tr>
<tr>
<td>Cataracts</td>
<td><strong>Clouding</strong> of the eye's natural lens which lies behind the iris and the pupil. It is the most common cause of vision loss in people &gt;40 and is the principal cause of blindness in the world. Other RFs include: UV radiation from sunlight and other sources, diabetes, hypertension, obesity, smoking, prolonged corticosteroid medications, previous eye injury or inflammation, previous eye surgery, HRT, significant alcohol consumption and family history.</td>
</tr>
<tr>
<td>Glaucoma</td>
<td>A buildup of intraocular pressure causing damage to the optic nerve (which transmits images to the brain) and tends to worsen over time. If the damage continues untreated, permanent vision loss occurs within a few years. Glaucoma tends to be inherited and often manifests without early symptoms or pain.</td>
</tr>
<tr>
<td>Presbycusis</td>
<td>Is age-related, slowly declining hearing loss that manifests as people get older.</td>
</tr>
<tr>
<td>Tinnitus</td>
<td>Accompanies many forms of hearing loss, including those that sometimes come with aging. May manifest as a ringing, roaring or some other noise inside the ears. May be caused by loud noise, hearing loss, certain medicines and certain allergies.</td>
</tr>
</tbody>
</table>
While on a family vacation, a 65 year old woman tries on an oversized wide-brimmed hat bought for her as a souvenir by her grand-daughter. After a few seconds, she temporarily loses her balance and is steadied to prevent her from falling even though she is standing on firm ground. As a precaution, further balance tests are carried out upon her return from vacation. The CTSIB test is administered and reveals that she is also unstable in positions 4, 5 and 6. This indicates that the patient;

a) Is dependent on vision for balance  
b) Has sensory selection problems  
c) Is dependent on surface/somatosensory inputs for balance  
d) Is displaying vestibular loss
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a) Is dependent on vision for balance
b) Has sensory selection problems ✔
c) Is dependent on surface/somatosensory inputs for balance
d) Is displaying vestibular loss

**Option B is the correct answer.**

In the CTSIB (the Clinical Test of Sensory Interaction for Balance), patients with sensory selection problems become unstable in conditions 3-6.

The oversized wide-brimmed hat served the same function as a visual conflict dome while on firm ground – 3 (vision is present but conflicts with vestibular information).

The prevalence of gastrointestinal problems increases with age. Gastroesophageal reflux disease (GERD) occurs when the lower esophageal sphincter does not close properly and stomach contents leak back (reflux) into the esophagus. Heartburn occurring more than 2 times a week may be considered GERD and may portend more serious health problems. About 40% of adults ages 40 to 74 — or 41 million people — have pre-diabetes, a condition that raises a person's risk for developing type 2 diabetes, heart disease, and/or stroke.
• Diabetes describes a group of metabolic diseases in which a person has high blood glucose (blood sugar), either because insulin production is inadequate or because the body's cells do not respond properly to insulin, or both. Patients with high blood sugar will typically experience polyuria (frequent urination), they will become increasingly thirsty (polydipsia) and hungry (polyphagia).
Type 1 Diabetes - the body does not produce insulin. Approximately 10% of all diabetes cases.

Type 2 Diabetes - the body does not produce enough insulin for proper function. Approximately 90% of all cases of diabetes.

The most common diabetes symptoms include frequent urination, intense thirst and hunger, weight gain, unusual weight loss, fatigue, cuts and bruises that do not heal, male sexual dysfunction, numbness and tingling in hands and feet.

People with Type 1 diabetes who follow a healthy eating plan, perform adequate exercises and take insulin can lead a normal life.

People with Type 2 patients need to eat healthily, be physically active and test their blood glucose. They may also need to take oral medication, and/or insulin to control blood glucose levels.
Question 7

To get a second opinion on a random blood glucose test result of 140 mg/dL obtained as part of a job-related comprehensive medical check-up, a 37 year old woman elects to retake the blood glucose test 3 days after the first test. The second result (fasting blood sugar) is 130 mg/dL. These results indicate;

a) Hypoglycemia
b) Normal blood glucose values
c) Diabetes Mellitus
d) Impaired glucose tolerance
Question 7

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a) Hypoglycemia
b) Normal blood glucose values
c) **Diabetes Mellitus**
d) Impaired glucose tolerance
Question 7. Other systems. FDP. Diabetes.

Option C is the correct answer.

Blood glucose values >126 mg/dL (measured on 2 separate days) indicate Diabetes Mellitus.

## Blood Glucose Classification Chart

<table>
<thead>
<tr>
<th>Test Type</th>
<th>Optimal Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fasting Blood Glucose</td>
<td>≤100 (mg/dL) (5.6 mmol/L).</td>
</tr>
</tbody>
</table>
| Postprandial (2 Hours After Eating) | ≤50 yrs; less than 140 mg/dL (7.8 mmol/L)  
50–60 yrs; less than 150 mg/dL (8.3 mmol/L)  
≥60 yrs; less than 160 mg/dL (8.9 mmol/L)  |
| Random Or Casual                 | In general: before meals or when waking up;  
80–120 mg/dL (4.4–6.6 mmol/L). At bedtime;  
100–140 mg/dL (5.5–7.7 mmol/L)          |
UROGENITAL

• Bladder control or urinary incontinence is often caused by; an overactive bladder muscle (UUI), urinary tract infection, constipation (OUI), diabetes, medication side effects and difficulty getting to the toilet in time (FUI). Urinary incontinence can lead to problems such as falls, unpleasant odors, depression and isolation.
<table>
<thead>
<tr>
<th>CONDITION</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Incontinence</td>
<td>Refers to loss of bladder control and is very common in older people. Symptoms can range from mild leaking to uncontrollable wetting. At least 1 in 10 people age 65 or older has this problem and women are more likely than men to have incontinence. Aging alone does not cause incontinence. It can occur for many reasons: Urinary tract infections, vaginal infection or irritation, constipation and certain medicines can cause momentary bladder control problems.</td>
</tr>
<tr>
<td>Benign Prostatic Hypertrophy (BPH)</td>
<td>The prostate gland surrounds the urethra. This can cause problems as a man ages because the prostate tends to grow bigger with age and may squeeze the urethra. A tumor can also make the prostate bigger. These changes, or an infection, can cause problems passing urine. Sometimes men in their 30s and 40s may begin to have these urinary symptoms and need medical attention. For others, symptoms aren't noticed until much later in life.</td>
</tr>
<tr>
<td>Prostate Cancer</td>
<td>Prostate cancer is the second most common type of cancer among men in the US (following skin cancer). Out of every three men who are diagnosed with cancer each year, one is diagnosed with prostate cancer.</td>
</tr>
</tbody>
</table>
A 55 year old arthritic male patient (chronic, hip and knees) indicates that he suffers from detrusor instability during his initial screening/assessment. Prior to the first scheduled gym session with his PT, the patient excuses himself in order to use the bathroom. He returns with a wet patch on the front of his pants (trousers) and is embarrassed to continue with the session. The patient's wife explains that her husband was unable to find the restroom on time. This scenario best suggests which type of urinary incontinence?

a) Urge urinary incontinence
b) Stress urinary incontinence
c) Overflow urinary incontinence
d) Functional urinary incontinence
A 55 year old arthritic male patient (chronic, hip and knees) indicates that he suffers from detrusor instability during his initial screening/assessment. Prior to the first scheduled gym session with his PT, the patient excuses himself in order to use the bathroom. He returns with a wet patch on the front of his pants (trousers) and is embarrassed to continue with the session. The patient's wife explains that her husband was unable to find the restroom on time. This scenario best suggests which type of urinary incontinence?

a) Urge urinary incontinence
b) Stress urinary incontinence
c) Overflow urinary incontinence
d) Functional urinary incontinence
Question 8. Other systems. FDP. Urinary incontinence.

Option D is the correct answer.

Functional urinary incontinence (FUI) occurs when individuals with normal bladder and urethral function have difficulty getting to the toilet before urination occurs. FUI may be seen with other types of bladder issues or neurological conditions and usually presents in patients with impaired or restricted mobility or mental confusion.

Detrusor muscle over activity or instability is most commonly associated with urge urinary incontinence and the incontinence that results is involuntary. The scenario in the question however points to incontinence as a result of some type of mobility restriction (arthritis) which caused an inability or difficulty to get to the toilet quickly enough.

SKIN

• Sunlight is a major cause of age-related skin changes e.g. wrinkles, dryness and age spots. Skin changes associated with age includes less sweating (leading to increased dryness). The skin also becomes thinner and loses fat making it less pliant and smooth.

• Smokers tend to have more wrinkles than nonsmokers of the same age, complexion, and history of sun exposure because smoking tends to damage elastin proteins. Facial wrinkling increases with the amount of cigarettes and number of years smoked.
<table>
<thead>
<tr>
<th>CONDITION</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry Skin</td>
<td>Affects many older people (rough, scaly skin on the lower legs, elbows and forearms often accompanied by a distressing, intense itchiness). The condition is worsened with dehydration, sun exposure, smoking, stress, low humidity, the loss of sweat and oil glands that accompanies aging and anything that further dries the skin such as overuse of soaps, antiperspirants, perfumes, or hot baths.</td>
</tr>
<tr>
<td>Skin cancer</td>
<td>Is the most common type of cancer in the US. About 40 to 50% of Americans &gt;65 years will have skin cancer at least once. The 3 most common types are; Basal cell carcinomas (the most common - 90 % of all skin cancers in the US). They are slow-growing cancers that seldom spread to other parts of the body. Squamous cell carcinomas also rarely spread, but they do so more often than basal cell carcinomas. The most dangerous of all skin cancers is melanoma which can spread to other organs with often fatal outcomes.</td>
</tr>
<tr>
<td>Shingles</td>
<td>Is caused by varicella-zoster virus (chickenpox) and affects nerves causing pain and blisters in adults. Following recovery from chickenpox, the virus lies dormant in some nerve cells and can become activated producing shingles. Most affected adults never get shingles but about 1 in 5 people with earlier chickenpox affection will get shingles later in life usually after the age of 50.</td>
</tr>
</tbody>
</table>
Question 9

A patient presents with a painful ulcer as shown in the image below. The pain is described as moderate by the patient (5/10 on a numerical pain rating scale). The PT checks the dorsalis pedis artery and documents it as normal. Which of the options best describes the patient's presentation above?

Image Ref: [https://www.studyblue.com/notes/note/n/derm-photos/deck/12306990](https://www.studyblue.com/notes/note/n/derm-photos/deck/12306990)

a) Arterial insufficiency ulcer
b) Neuropathic ulcer
c) Venous insufficiency ulcer
d) Diabetic ulcer
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a) Arterial insufficiency ulcer
b) Neuropathic ulcer
c) **Venous insufficiency ulcer**
d) Diabetic ulcer
Option C is the correct answer.

In addition to the discoloration of the surrounding skin (hemosiderin staining), venous insufficiency ulcers (VIU) are painful ulcers characterized by normal pedal pulses, an irregular shape and shallow depth. In addition, VIUs are also mostly located proximal to the medial malleolus.

Incorrect options
a) Pedal pulses are diminished or absent in arterial insufficiency ulcers
b) Neuropathic ulcers may be painless when palpated due to a loss of sensation
d) Neuropathic ulcers are mostly associated with diabetes mellitus

Question 9b

A heavily draining wound faces further risk of maceration. A PTA considers different types of wound dressings available as part of a wound healing intervention. From the options given, which is the least appropriate type of dressing for the wound described?

a) Hydrocolloids
b) Alginates
c) Hydrogels
d) Semipermeable foams
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a) Hydrocolloids
b) Alginates
c) Hydrogels ✔
d) Semipermeable foams

**Option C is correct.**

From the options given, hydrogels are the least moisture retentive dressings (or the least absorbent dressings) making it the least ideal or the least appropriate dressing for the wound described in the question (maceration risk is increased with additional exposure to moisture).

Furthermore, in terms of moisture retention properties, semipermeable foam dressings are more moisture retentive than hydrocolloids and alginates are the most moisture retentive dressings (from the list given).
Question 10 (72 secs)

A PT takes part in clinical ward round where several patients with varying wound conditions are reviewed. The patients' wounds have been documented using different classification systems. From the options below, which patient has the deepest wound presentation?

a) Pressure ulcer stage II
b) Wagner ulcer grade 2
c) Partial thickness tissue loss (Classification by depth of tissue injury)
d) Pressure ulcer stage III
A PT takes part in clinical ward round where several patients with varying wound conditions are reviewed. The patients' wounds have been documented using different classification systems. From the options below, which patient has the deepest wound presentation?

a) Pressure ulcer stage II

b) Wagner ulcer grade 2

C) Partial thickness tissue loss (Classification by depth of tissue injury)

d) Pressure ulcer stage III
Option B is the correct answer.

In a wound classified as Wagner ulcer grade 2, there is penetration through the subcutaneous tissue and may expose bone, tendon ligament or joint capsule. Compared to the other options, this is the deepest wound presentation.

a) A wound classified as Pressure ulcer stage II is a wound with partial thickness tissue loss.

d) A wound classified as Pressure ulcer stage III is a wound with full thickness tissue loss up to the subcutaneous fat. However, bones, tendons or muscles are not exposed.

FUNCTIONAL ABILITIES

• Falls become an increasingly common reason for injuries with age because sight, hearing, muscle strength, coordination and reflexes decline with age. Balance can be affected by circulatory or nervous system compromise and some medications (which can cause dizziness).

• Improvement of overall health and well-being tends to decrease the likely incidence of falls. A bone mineral density test can indicate how strong the bones are and if needed, medication can be prescribed to enhance bone strength.
# Functional assessments

Functional balance tests are helpful to document balance status and changes with intervention.

<table>
<thead>
<tr>
<th>Test</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Tinetti Balance and Gait Test</td>
<td>Is one of the oldest clinical balance assessment tool and the widest used among older people because of its inclusion of both balance and gait. It has good inter-rater reliability and excellent sensitivity (93% of fallers are identified). However, many items are difficult to assess on a 3-point scale and it has poor specificity (only 11% of non-fallers were identified).</td>
</tr>
<tr>
<td>The Berg Balance Scale</td>
<td>Was also developed for older people, in whom a score higher than 45 was related to a low risk of fall history.</td>
</tr>
<tr>
<td>The Timed ‘Up and Go Test’ (TUG)</td>
<td>Is one of the shortest, simplest clinical balance test, and probably the most reliable because it uses agreement in stop-watch durations rather than rating scales. The TUG is widely used because of it’s ease of application and its ability to predict risk of falls in the elderly</td>
</tr>
<tr>
<td>The functional reach test</td>
<td>Was developed to evaluate the maximum limits of stability in stance. Subjects are asked to reach as far forward as they can while standing independently. Reaching in the lateral and backwards directions have also been added.</td>
</tr>
</tbody>
</table>
Question 11

A middle-aged patient is undergoing an exercise stress test. Which of the following complaints by the patient or observations by PT signals that the stress test should be stopped immediately?

a) The PT observes that the patient is pallid
b) The patient complains of tiredness but is willing to continue
c) The patient complains of shortness of breath at the beginning of the test
d) The patient complains of chest pain (2 on an angina pain scale)
A middle-aged patient is undergoing an exercise stress test. Which of the following complaints by the patient or observations by PT signals that the stress test should be stopped immediately?

a) The PT observes that the patient is pallid  

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Option A is the correct answer.

Signs of poor perfusion such as cyanosis or pallor is an absolute indication for terminating an exercise test. All the other options are relative indications and it is left to the PT's judgement whether to terminate the test or not.

ACSM Indications for Terminating an Exercise test

Relative Indicators

- Any chest pain that is increasing
- Physical or verbal manifestations of SOB or severe fatigue
- Wheezing
- Leg cramps or intermittent claudication (grade 3 on a 4-point scale)
- Hypertensive response (SBP >260 mm Hg; DBP>115 mm Hg)

Less serious arrhythmias such as

Absolute Indicators

- Suspicion of a MI or acute MI (heart attack)
- Onset of moderate-to-severe angina
- Drop in SBP below standing resting pressure or drop in SBP with increasing workload accompanied by signs or symptoms
- Signs of poor perfusion, including pallor, cyanosis, or cold and clammy skin
- Severe or unusual shortness of breath
- Patient’s request (to stop)
Question 11

A middle-aged patient is undergoing an exercise stress test. Which of the following complaints by the patient or observations by PT signals that the stress test should be stopped immediately?

a) The PT observes that the patient is pallid

b) The patient complains of tiredness X

Physical or verbal manifestations of shortness of breath or severe fatigue are relative indicators for termination of an exercise stress test.

c) The patient complains of shortness of breath at the beginning of the test

d) The patient complains of chest pain (2 on an angina pain scale)
Question 11

A middle-aged patient is undergoing an exercise stress test. Which of the following complaints by the patient or observations by PT signals that the stress test should be stopped immediately?

- a) The PT observes that the patient is pallid
- b) The patient complains of tiredness
- c) The patient complains of shortness of breath at the beginning of the test
  
  *Severe or unusual shortness of breath is an absolute indicator*

- d) The patient complains of chest pain (2 on an angina pain scale)
Question 11

A middle-aged patient is undergoing an exercise stress test. Which of the following complaints by the patient or observations by PT signals that the stress test should be stopped immediately?

a) The PT observes that the patient is pallid
b) The patient complains of tiredness
c) The patient complains of shortness of breath at the beginning of the test
d) The patient complains of chest pain (2 on an angina pain scale) X

Any chest pain that is increasing is given as a relative indicator while the onset of moderate-to-severe angina (chest pain) is an absolute indicator.
A PT carries out a two-part clinical test on a recently referred geriatric patient. One part of the test involves slightly nudging or pushing the patient (while the patient is standing) with a view to observing if the attempt at destabilization compromises the patient's balance. Which of the following options best describes the test above?

a) Tinetti performance oriented mobility assessment

b) The Fugl-Meyer test

c) Romberg balance test

d) Berg balance test
Question 12

A PT carries out a two-part clinical test on a recently referred geriatric patient. One part of the test involves slightly nudging or pushing the patient (while the patient is standing) with a view to observing if the attempt at destabilization compromises the patient's balance. Which of the following options best describes the test above?

a) Tinetti performance oriented mobility assessment
b) The Fugl-Meyer test
c) Romberg balance test
d) Berg balance test

a) Tinetti performance oriented mobility assessment ✅

Option A is the correct answer.

The Tinetti performance oriented mobility assessment is made of 2 parts. The first part is scored on a 3 point scale (i.e. 0,1,2) with a total score of 16. This part assesses (among other things) if a patient can tolerate a slight push/nudge without compromising balance.

The second part is scored an a similar point scale as the first part (0-2) with a total score of 12. The overall maximum score is 28 with a score of less than 19 indicating a high risk for a fall.

ONLY ONE FIST PUMP really MATTERS!

• The one you give after you see that ‘PASS’ against your name!

• From all of us at PTFE - BEST WISHES IN YOUR EXAMS!

• Join me next week (7am MST) for the concluding bonus lecture in the series

Thank you for your time!
...IF A LION KNOWS HIS OWN STRENGTH, HARD WERE IT FOR ANY MAN TO RULE HIM..

Sir Thomas More 1478-1535
BRAVEST KID IN ARGENTINA AWARD