A Massage Therapist’s Guide to Pathology

Why Massage Works

• Why Massage Works
  – Reflexive Methods
    • Reflexes are specific and predictable
    • Stimulate nervous system
    • Stimulate endocrine system
  – Mechanical Methods
    • Apply some sort of force (tension, bending, compression)
    • Address connective tissue
    • Moves body fluids or intestinal contents

Why Massage Works

– Effects on the Body
  • Neuroendocrine
    – Is thought to have an effect on blood levels of serotonin, dopamine, and endorphins
    – Is thought to have an effect that may reduce cortisol and can regulate epinephrine and norepinephrine
    – Is thought to have an effect that can give a client feeling of connectedness or intimacy due to increase in oxytocin

Why Massage Works

– Sympathetic Response
  • Initial effect of massage
  • Can be used to stimulate the client
  – Parasympathetic Response
    • Slow, deep strokes can create a relaxation response
    • Point holding can generate an endorphin release

Why Massage Works

– Entrainment
  • Music
  • Commercials
– Breathing
  • Normal breathing rate is 12 to 16 times a minute
– Rocking
  • Vestibular apparatus (inner ear)
– Neuromuscular mechanisms
  • Hyperstimulation analgesia
  • Counterirritation

Indications for Massage

• Indications for Massage
  – Massage may enhance health
  – Massage may aid in treating disorder
  – Massage may assist other health care professionals
Contraindications for Massage

- **Contraindications for Massage**
  - General contraindications - Do not perform any massage techniques
  - Regional contraindications - Perform massage but not to certain areas
  - Application with caution - Carefully choose massage applications to be used

Approaches to Care

- **Approaches to Care**
  - Therapeutic Change
    - Change in form or function
    - Motivated client
  - Condition Management
    - Not able or desire to change
    - Support client
  - Palliative Care
    - Soothe or relieve
    - Reduce intensity of symptoms

Terminology

- **A, an:** without
- **Adeno:** glandular
- **Algae:** pain
- **Angio:** blood or lymph vessels
- **Arth:** joint
- **Brady:** slow
- **Cardio:** heart
- **Cep., Ceph:** head, brain
- **Cyst:** hollow organ
- **Derm:** skin
- **Dys:** difficulty
- **Ecto, -ectomy:** removal
- **Emia:** blood
- **Endo:** inside
- **Epi:** upon
- **Eryth:** red
- **Gyn:** beginning, producing
- **Glyco:** relating to sugar
- **Graphy:** recording, writing
- **Hepat:** liver
- **Hydro:** water
- **Hyper:** above, too much
- **Hypo:** below, too little
- **Infl:** inflammation
- **Leuko:** white
- **Lipo:** fat
- **Logy:** study
- **Mig:** -ysis, -sis, destruction
- **Meno:** month
- **Micro:** small
- **Myeo:** marrow or spinal cord

Language of Pathology

- **Disease** - condition of abnormal function involving anatomic structures or body systems
- **Pathology** - study of disease
  - Includes causes and effects of disease
- **Diagnosis** - evaluation of physical signs and symptoms, medical history, physical examination, and other procedures that lead to identifying particular diseases
- **Prognosis** - prediction of how disease will progress and chances of recovery

- **Patho:** disease state
- **Physio:** nature
- **Pseudo:** false
- **Psych:** the mind, mental
- **Sarco:** flesh
- **Sclero:** hardness, scarring
- **Spondy:** spine
- **Stasis:** stagnation, standing still
- **Thrombo:** clot
- **Therm:** temperature
- **Trophy:** -rophic: nutrition, growth
- **Vaso:** blood vessel

- **Signs** - objective indicators of disease obvious to someone other than affected individual
  - Can be measured and observed
- **Symptoms** - subjective feelings of which only the affected person is aware
- **Asymptomatic** - disease without symptoms
### Language of Pathology

- **Syndrome** – group of signs and symptoms occurring together to present a disease or abnormality
- **Etiology** – causes or origins of disease
- **Idiopathic** – disease without a known cause
- **Risk factors** – tendencies that promote disease development

### Language of Pathology

- **Disease** can be described by its degree of involvement:
  - Local disease: affects one body area
  - Systemic disease: distributed throughout the body
  - Acute disease: abrupt onset and runs a brief course
  - Chronic disease: develops gradually, vague or mild symptoms, lasts longer than 6 mo.

### Language of Pathology

- **Remission** – period of partial or complete disappearance of signs and symptoms
- **Exacerbation** – period of increased signs and symptoms
- **Complications** – conditions arising after onset of original disease

### Infectious agents

- **Pathogen**: disease-causing organism
- **Resistance** is based on genetics, virulence, and lifestyle habits
- **Five basic classes**:
  - **Prions**
  - **Viruses**
  - **Bacteria**
  - **Fungi**
  - **Animals**

### Infectious agents

- **Prions**
  - No DNA, RNA
  - Grow within CNS
  - Spread through eating contaminated tissue, contaminated blood, transplant tissue, surgical tools
  - BSE ("mad cow")

- **Viruses**
  - Packets of DNA, RNA
  - Cannot replicate outside a host
  - Reprogram target cell to produce virus
  - Infected cells rupture, releasing viral copies
  - Many disintegrate outside a host
  - Some are stable, especially herpes simplex, hepatitis B, hepatitis C
Infectious agents

- **Bacteria**
  - Single-celled microorganisms
  - Can survive outside a host
  - Not all pathogenic; some are beneficial
  - Pathogenic bacteria attack cells/releases toxic wastes that damage cells
  - Antibiotics interfere with bacterial reproduction
  - TB, tetanus, anthrax

Infectious agents

- **Fungi**
  - Yeasts and molds
  - Internal: associated with imbalance between yeasts and bacteria
  - External: skin infections

Infectious agents

- **Animal parasites**
  - Single or multi-cellular organisms
  - Live in or on a host
  - Can be vector for other diseases
    - Protozoa (Giardia, crypto)
    - Head lice, crab lice, mites
    - Mosquitoes, ticks, fleas don’t live on or in host, but can spread disease

Infectious agents

- **Protozoa**
  - Giardia, crypto
- **Head lice**, **crab lice**, **mites**
- **Mosquitoes**, **ticks**, **fleas**

Hygienic practices

- **Definition of terms**
  - **Cleaning** - removal of soil
  - **Disinfection** - destruction of most pathogens
  - **Sterilization** - destruction of all microorganisms
  - **Sanitation** - measures designed to prevent disease
  - **Plain soap** - detergents that contain no antimicrobial products
  - **Antimicrobial soap** - detergents that contain antimicrobial products
  - **Alcohol-based hand rub** contain 60-95% alcohol

Hygienic practices

- **Universal and Standard Precautions**
- **Protection from potentially infectious fluids**
  - Semen
  - Vaginal secretions
  - Breast milk
  - Cerebrospinal fluid
  - Synovial fluid

Hygienic practices

- **Hand washing**
  - Work to preserve lipid layer, skin health
    - Transient bacteria: superficial, easy to remove
    - Resident bacteria: deep, harder to remove (generally less aggressive)
  - Running warm water, plain soap, 30 seconds
    - Liquid soap is preferable
    - Antimicrobial soap more likely to cause allergic reaction
Hygienic practices

- Alcohol-based gels
  - Can be faster, more convenient
  - Doesn’t remove dirt
  - Use according to manufacturers’ recommendations
- Alcohol-soaked towelettes not adequate
- Moisturizing lotions are important

Hygienic practices

- Other Hand Care
  - Hang nails and other lesions
    - Cuticle nippers, cover sores
  - Trim, clean fingernails
- Care of surfaces, equipment
  - Goal: create an environment where nothing that one client touches directly or indirectly is touched by another client before it is cleaned

Hygienic practices

- Fabrics
  - All surfaces touched by client or therapist must be cleaned or replaced with each appointment
  - Linens, face cradle covers, bolster/pillow covers, etc.
  - Therapist clothing: consider changing shirt or apron with each client

Hygienic practices

- Laundering:
  - Professional laundering services use water that is 160°F, 25 minutes of agitation
  - 71-77°F with adequate detergent for anti-microbial effect
  - Bleach is most active at 135-145°F
- Other items must be laundered at home:
  - Clothing, bolster covers, face cradle covers, etc.

Hygienic practices

- Swab massage tables, face cradles, vinyl-covered furniture
  - CDC recommends 10% bleach solution
  - Alcohol evaporates too quickly to be useful
  - Isolate massage lubricants
  - Wash oil/lotion bottles with hands
  - Keep bottles off floor, other contaminated surfaces

Hygienic practices

- Other items:
  - Hot or cold rocks and crystals may be sterilized
  - Tools, hot/cold packs, etc.
- The massage environment
  - Can harbor allergens: vacuum regularly
  - Door knobs, switch plates, bathroom surfaces, telephones, etc.
  - Cash is often contaminated
The inflammatory process

- **Response to tissue damage or the threat of invasion by antigens**
  - Triggered by:
    - Physical trauma
    - Invasion with foreign bodies
    - Hormonal changes
    - Autoimmune activity

- **Purpose:**
  - Protect from pathogenic invasion
  - Limit range of contamination
  - Prepare damaged area for healing

- **Outcomes:**
  - Complete resolution with no scar tissue
  - Accumulation of scar tissue
  - Formation of cysts/abscesses
  - Chronic inflammation

The inflammatory process

- **Components of inflammation: vascular activity**
  - Vasoconstriction
  - Vasodilation
    - Chemicals released by damaged endothelium and mast cells
    - Increase permeability of capillaries
    - Reinforce capillary dilation
    - Attract platelets
    - Slow blood flow away from area
  - May last several minutes to hours or days

- **Components of inflammation: cellular activity**
  - Many cells are recruited to manage tissue damage and contamination risk with injury.
  - Endothelial cells:
    - Release chemicals to activate platelets, allow WBCs to migrate out of capillaries
    - Proliferate to grow new capillary beds in later stages
  - Platelets:
    - Become jagged and sticky, adhere to damaged area
    - Release chemicals to bind with plasma proteins to create fibrin, blood clots

- **Mast cells:**
  - Located in tissues vulnerable to injury
  - Release histamine to prolong inflammatory response

- **Monocytes and macrophages:**
  - Monocytes = large, mobile white blood cells
  - Can become permanently fixed macrophages
  - Associated with late-stage inflammation to clean up debris

- **Lymphocytes:**
  - Work with macrophages to clean up debris, promote scar tissue, angiogenesis

- **Fibroblasts**
  - Produce collagen, extracellular matrix
  - Drawn to local blood clots, may proliferate to form more scar tissue

- **Chemical mediators**
  - Many sources of chemical mediators that help coordinate cellular activity:
    - Suspended in plasma, from platelets, mast cells, basophils, endothelial cells
The inflammatory process

- **Acute stage**
  - Damaged cells release chemicals
  - Edema develops
  - Platelets, early WBCs arrive
  - Tissue exudate begins to form
  - Time: depends on severity (1-3 days, usually)

- **Subacute stage**
  - AKA proliferative stage
  - Cells accumulate to fill in damaged area
    - Endothelial cells grow new capillaries
    - Fibroblasts create collagen fibers
  - Slower WBCs arrive to start clean-up
  - Time: depends; 2-3 weeks

- **Postacute stage**
  - AKA maturation stage
  - Collagen becomes denser and aligns according to force

- **Chronic inflammation**
  - Inflammatory process is not successful
    - Pathogens/irritants not removed (leads to cysts, abscesses)
    - Excessive scar tissue interferes with organ function
    - Sinuses or fistulae develop
    - Musculoskeletal structures never regain full function
    - Excessive external scar tissue

- **Signs and symptoms:**
  - Pain, heat, redness, swelling, and sometimes loss of function
    - Dolor (pain)
    - Calor (heat)
    - Rubor (redness)
    - Tumor (swelling) and
    - Functio Laesa (loss of function)

- **Treatment:**
  - Anti-inflammatory drugs

- **Medications:**
  - OTC anti-inflammatories
  - Prescription NSAIDs
  - Prescription steroidal anti-inflammatories
The inflammatory process

- Massage
  - Risks: Acute localized infections locally contraindicate circulatory massage
  - Benefits: Post acute, maturation phase can benefit from fluid turnover, mechanical influence on scar tissue