

# Platelet Rich Plasma (PRP)

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# WHAT IS IT?

- “Application technique in musculoskeletal medicine utilizing concentrated healing components of patient’s own blood-reintroduced into specific site- to regenerate tissue and speed the healing process.”
  - Crane, Everts, Practical Pain Management Volume 8, Issue 1, Jan/Feb 2008

# Uses

- Soft tissue injuries:
  - Tendonopathy
  - Tendonosis
  - Acute and chronic muscle strain
  - Muscle fibrosis
  - Ligament sprains
  - Joint capsular laxity

# Uses

- Intra-articular injuries
  - Arthritis
  - Arthrofibrosis
  - Cartilage defects
  - Meniscal injury
  - Chronic synovitis
  - Joint inflammation

# Uses

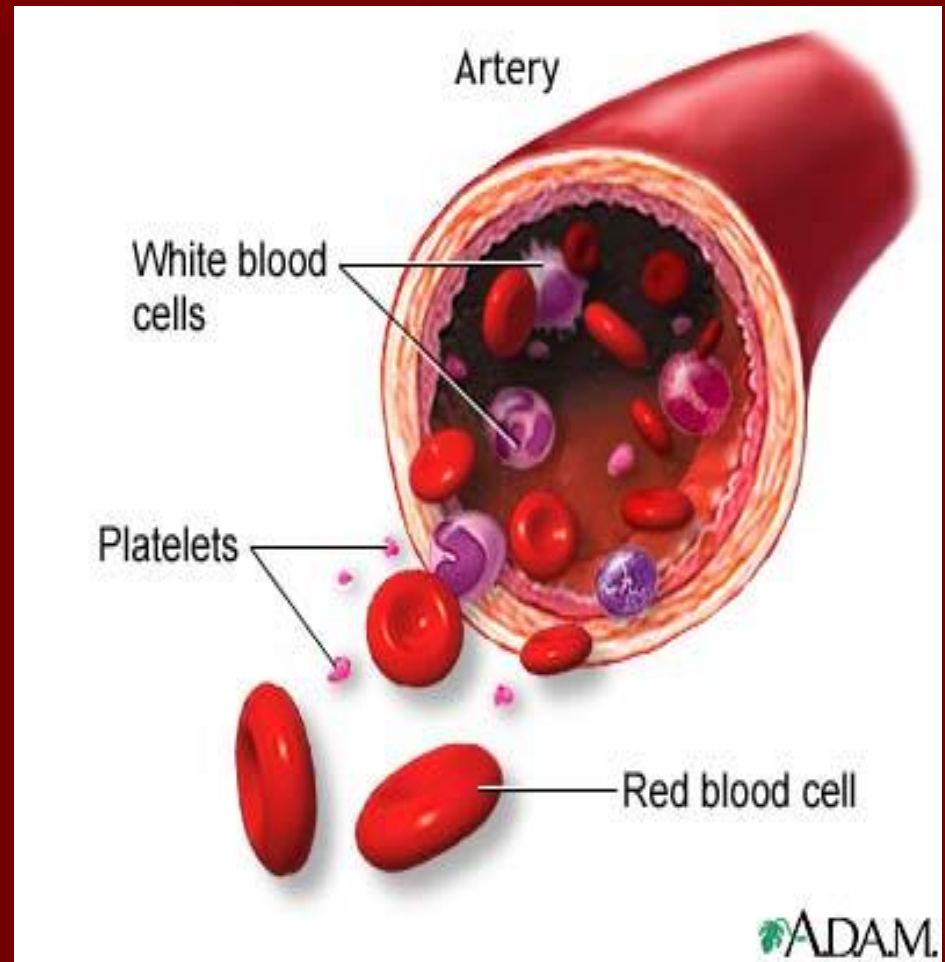
- Multiple specialties:
  - **Musculoskeletal**
  - Maxillofacial
  - Cosmetic
  - Spine orthopedic
  - Podiatric
  - General wound healing

# Uses

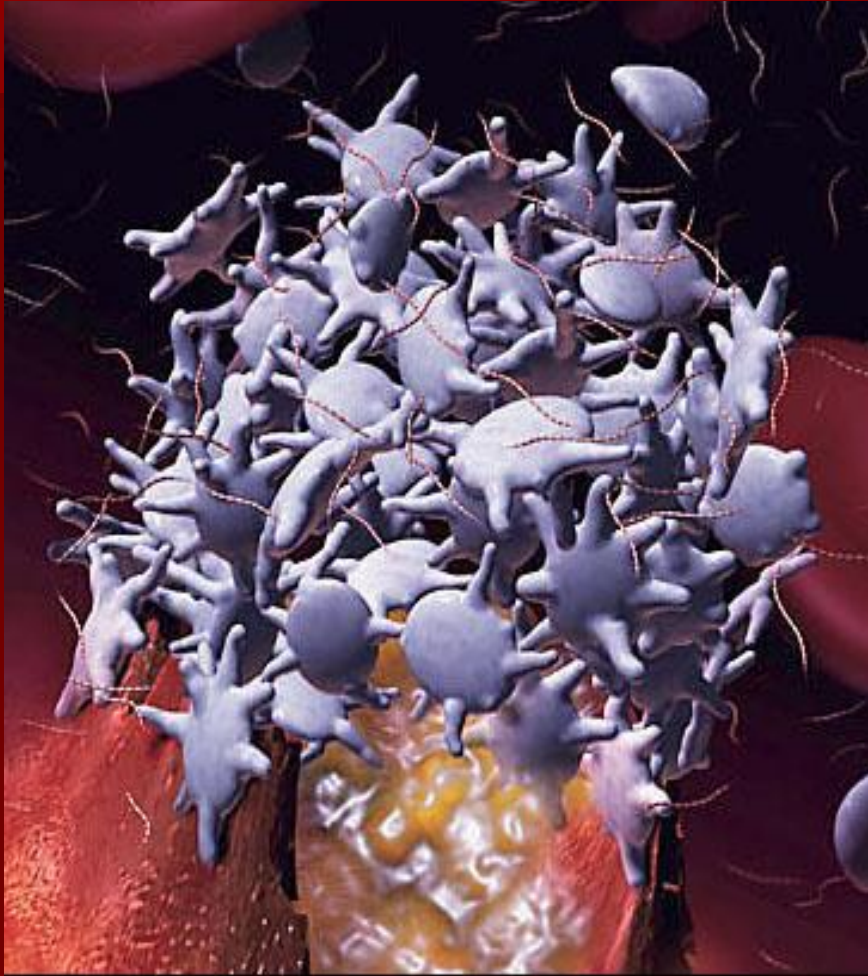
- Usually 2-3 injections spaced 4 to 6 weeks apart
- No limit to number of injections
- Risks and side effects do not change with number of injections

# Platelets- cells of the blood

- Components
  - Plasma
  - Red Blood Cells
  - White Blood Cells
  - Platelets (0.4%)



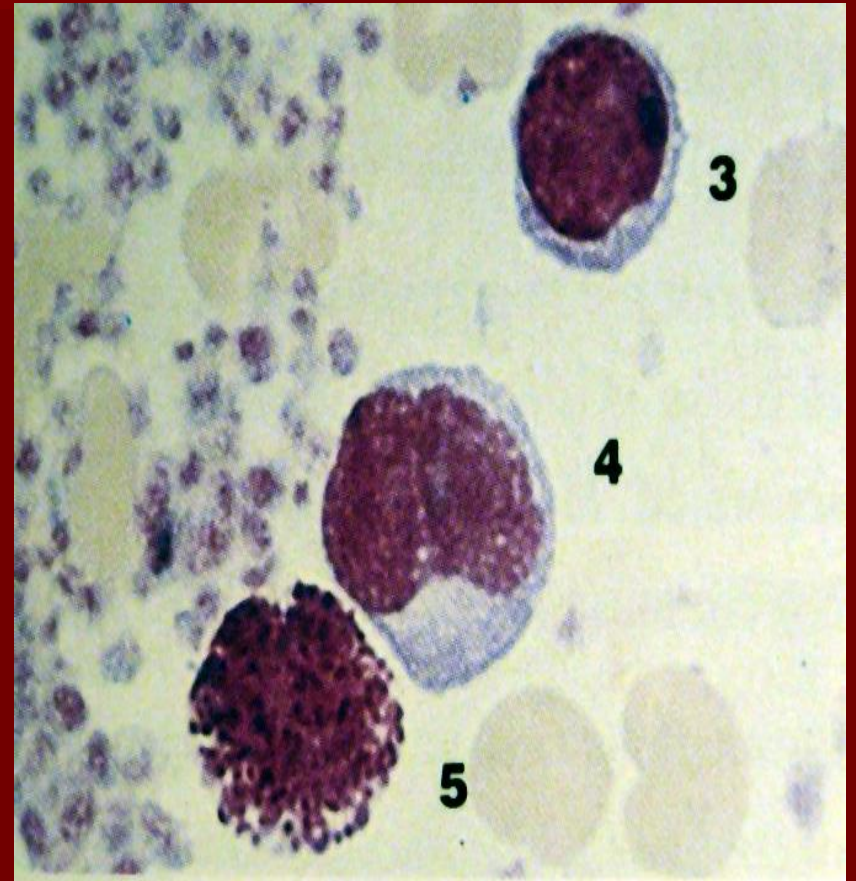
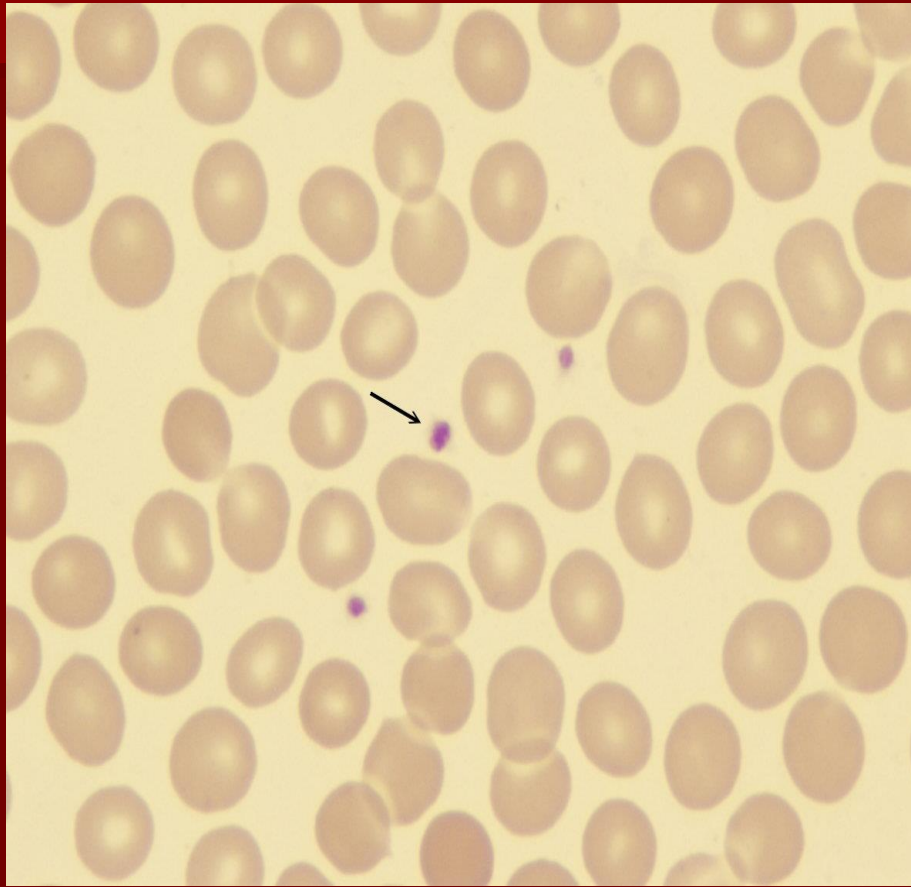
# What do Platelets do?



- Hemostatic Sealant
- Scaffold for tissue regeneration
- Growth factor concentration
- Stem cell binding



# Platelet Concentration





Activated platelets go attach to site of injury and release growth factors.

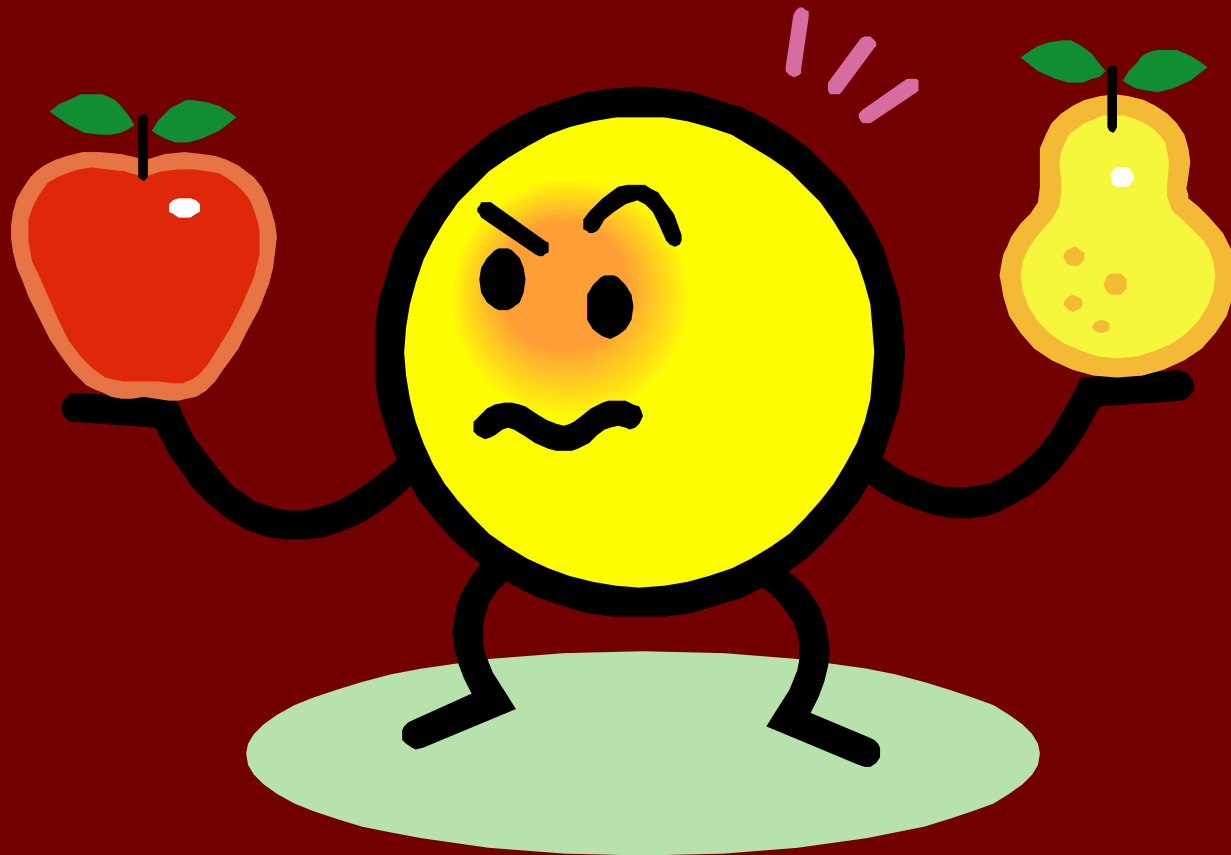
# Growth Factors

- PDGF (Platelet derived growth factor) 11x greater
- TGF (Transforming growth factor beta)- 11x greater
- VEGF (Vascular endothelial growth factor)- 11x greater

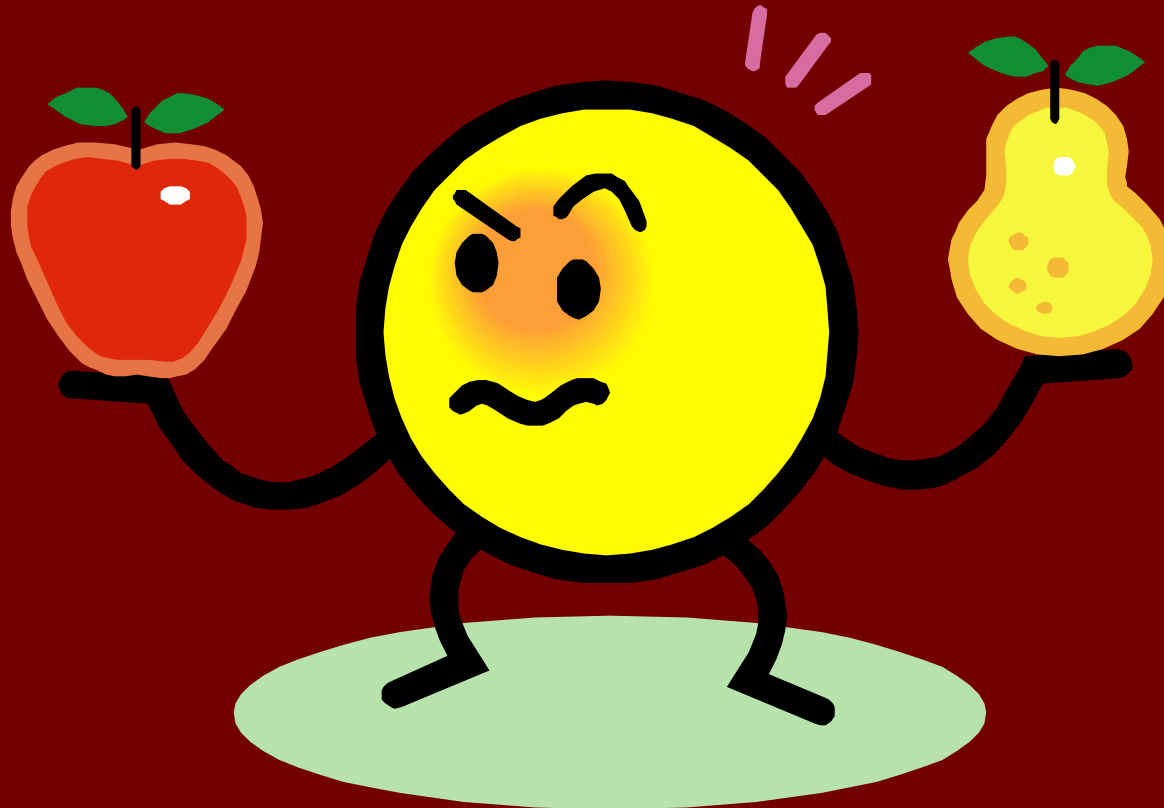
# Growth Factors and Tendon Repair

- Sped up cell division and growth (PDGF, TGF)
- Stimulates growth of blood vessels (VEGF)
- Chemo-attractive for stem cells (PDGF) to produce new tissue

# PRP vs. Cortisone Injections



# PRP vs. Prolotherapy



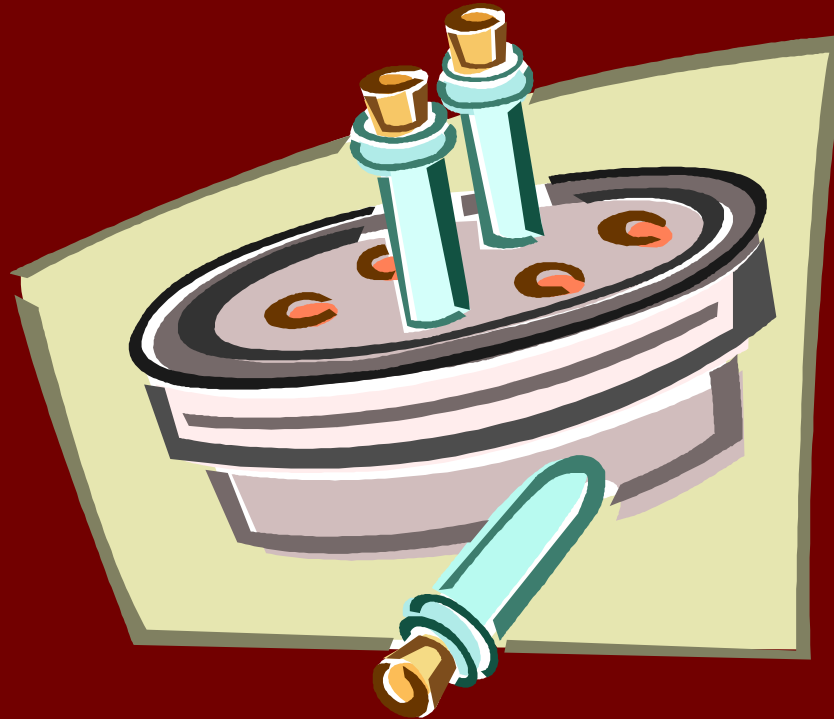
# Procedure

- Approx 30 cc venous blood drawn



# Procedure

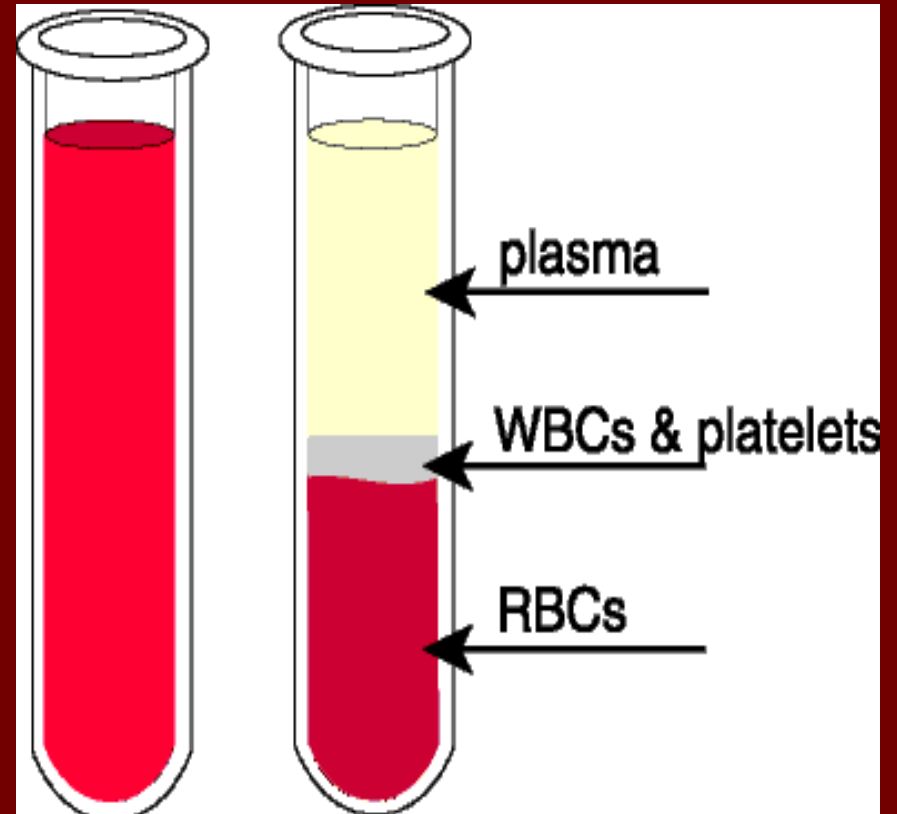
- Spun in centrifuge for 15 minutes

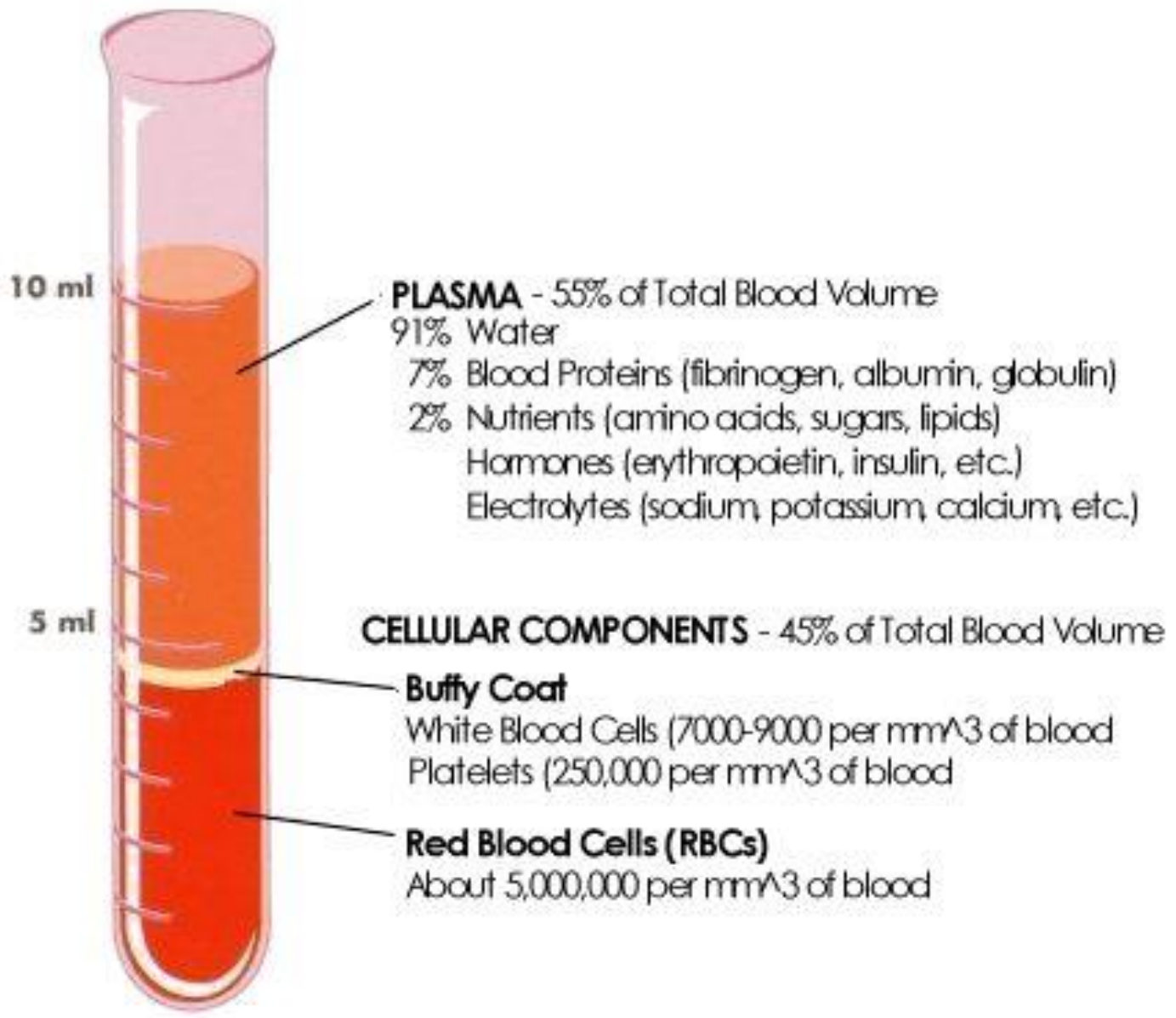




# Procedure

- Separation of platelets





# Procedure

- About 4 mL of platelet rich plasma separated and injected into tissue



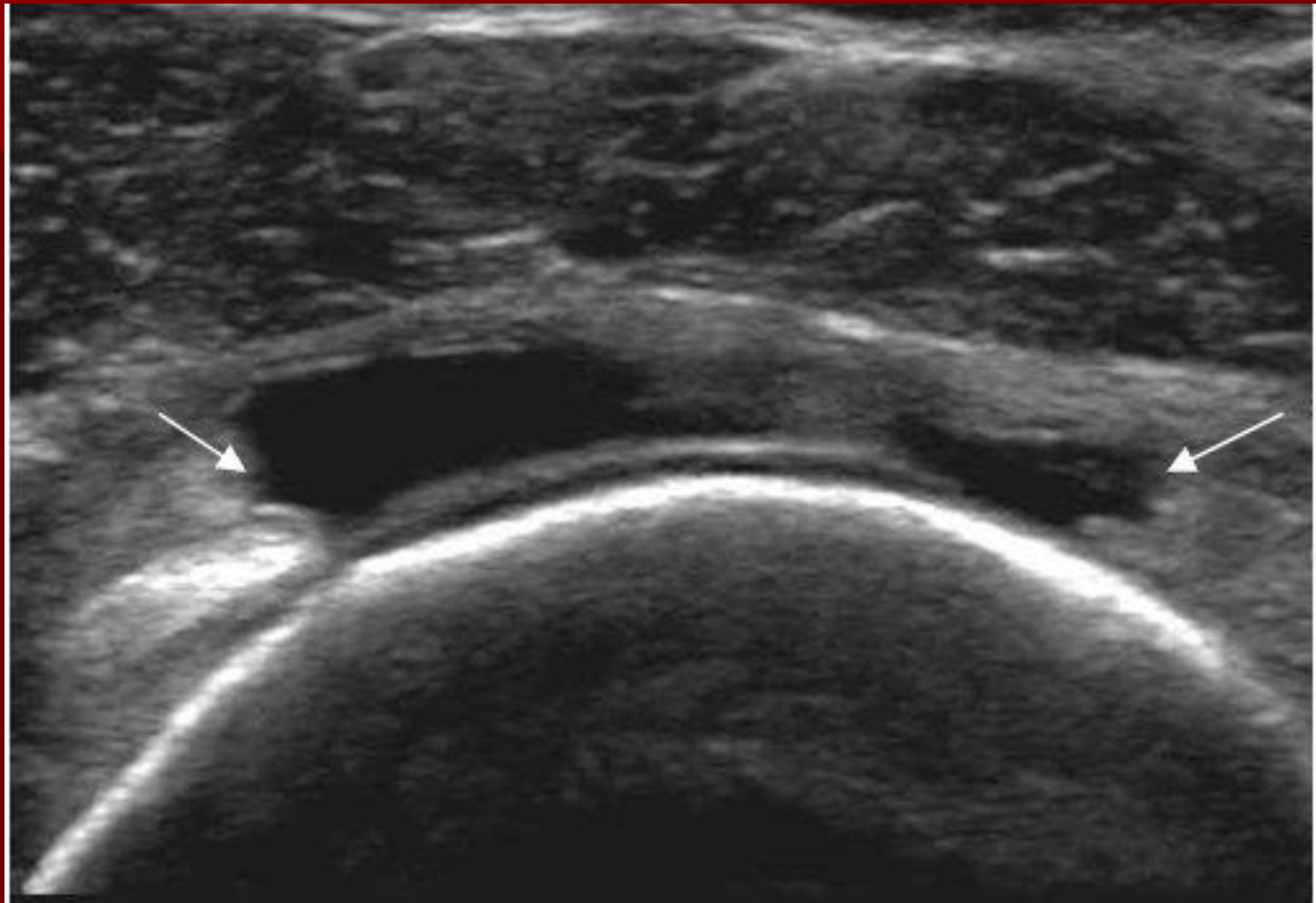
# Ultrasound Guidance

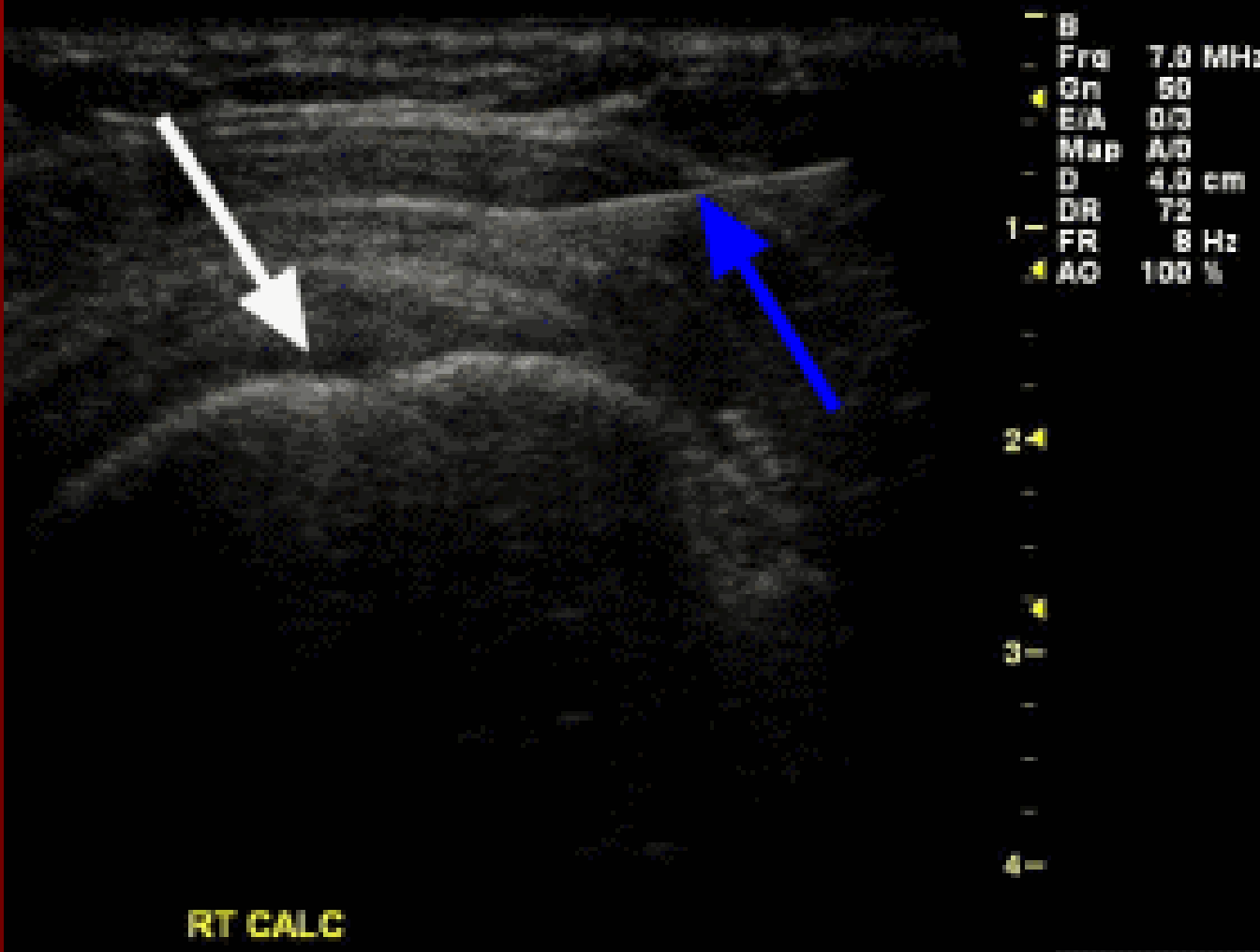


- No "blind injections".
- The needle is actually observed by ultrasound guidance going into the target area. The ultrasound can visualize soft tissue, nerves, tendons and bone.

# Ultrasound Guidance

- Target tissue visualized and the needle guided to make sure that the needle goes to the right spot to give the injection within 1 mm
- Significantly improves accuracy in giving many types of injections without harm to surrounding tissues.





# Limitations

- Only covers small areas
- Usually requires insurance verification
- Blood handling- universal precautions



# Contraindications to PRP

- Absolute:
  - Platelet dysfunction syndrome
  - Thrombocytopenia
  - Sepsis
  - Hemodynamic instability
  - hypofibrinogenemia

# Relative Contraindications

- Consistent NSAID use (within 48 hours)
- Steroid injection within 2 weeks of procedure
- Recent fever or illness
- Rash at donor site
- Cancer
- Pseudomonas
- HGB < 10
- Platelets < 105

# Patient Instructions

- Restriction of NSAIDS before or after injection
- F/u in 3 and 6 weeks
- Procedure may cause of discomfort, pain medication provided prophylactically.
- Aggressive physical activity discouraged following procedure