



KEEP THOSE JOINTS A MOVIN' & A GROOVIN'

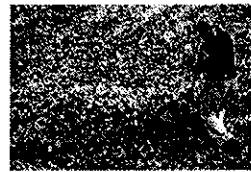
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Disclosures

- None

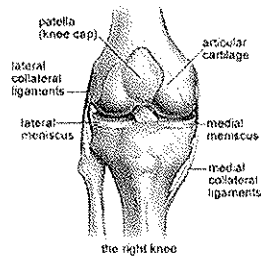
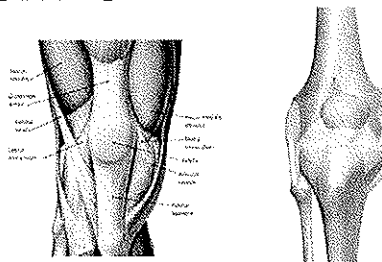
HEALTHY JOINTS PROVIDE:

- Movement
- Stability
- Comfort
- The ability to perform a wide variety of activities



HEALTHY JOINTS HAVE...

- Strong muscles & tendons
 - Move the joint
 - Support and protect the joint
- Well aligned bones
- Thick, spongy cartilage
 - Absorbs shock
 - Protects bones
- Flexible capsule/synovium
 - Holds joint together
 - Makes synovial fluid
 - Rich supply of blood vessels
- Silky synovial fluid
 - Lubricates joint
 - Nourishes bone



<https://www.nzihf.co.nz/media-resources-1/articles/personal-training-the-knee-joint-explained>

JOINT TRAUMA

Single Incident



Repetitive Trauma



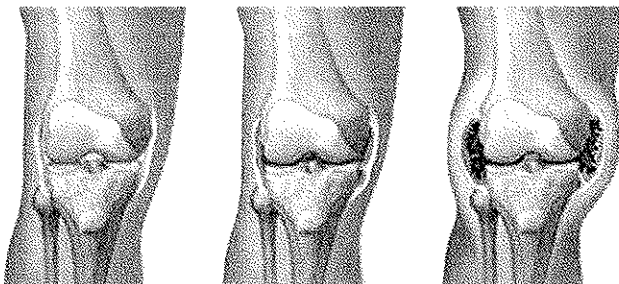
JOINT BLEED – on the outside



- (Bubbling, tingling, warm)
- Increasing stiffness
- Increasing swelling
- Increasing pain
- (Red, warm)
- Will not be black & blue
- Activity makes pain worse

https://www.physio-pedia.com/The_role_of_Physiotherapists_in_the_promotion_and_management_of_physical_activity_in_adolescents_with_Haemophilia

JOINT BLEED – on the inside

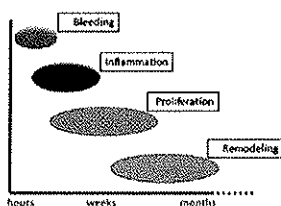


- Synovial lining is injured
- Small blood vessels break
- Blood leaks into joint space
- Blood causes inflammation, swelling, pain

<http://nasternan7thscience.pbworks.com/w/page/73355999/716%20Characteristics%20and%20Symptoms>

NORMAL TISSUE HEALING

Phases of tissue healing



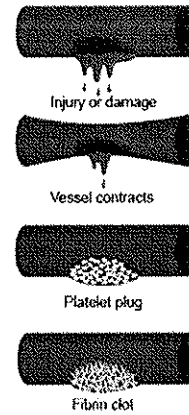
4 PHASES:

1. Bleeding/clotting
2. Inflammation
3. Proliferation (tissue repair)
4. Tissue remodeling

<https://thenakedphysio.com/2014/09/01/eat-your-way-to-a-better-recovery>

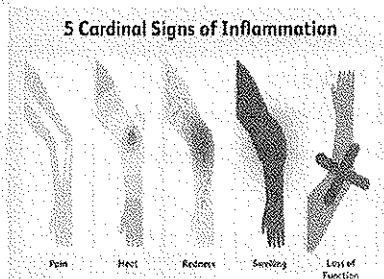
NORMAL PHASE 1: CLOTTING

- Stabilizes wound
 1. Blood vessel contracts
 2. Platelet plug forms
 3. Mesh wall forms
- Blood vessel heals
- Clot dissolves



<https://www.bleedingdisorders.com/bleeding-disorders-info/how-blood-clots-coagulation>

NORMAL PHASE 2: INFLAMMATION

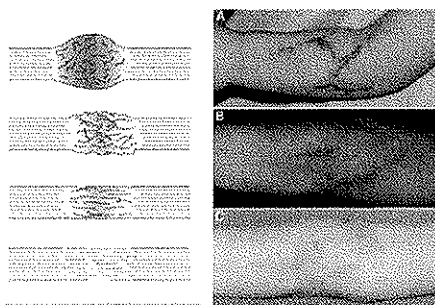


- Protects & prepares wound for healing
- Starts shortly after tissue is injured
- Lasts ~ 1 to 7 days
- Swelling limits movement, prevents further damage
- Joints:
 - Enzymes released to break down blood
 - New blood vessels form
- Once bleeding stops, inflammation starts to resolve

<https://www.verywellhealth.com/signs-of-inflammation-4580526>

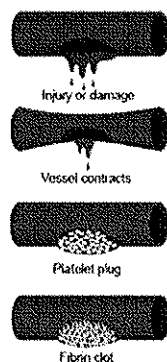
NORMAL PHASES 3 & 4: TISSUE REPAIR & REMODELING

- New tissue is made
 - Takes 4 days to 6 weeks
 - Disorganized pattern
 - Lacks strength, elasticity
- Tissue remodels
 - Takes 2-3 weeks to 1-2 years
 - Improves strength, function



<http://steastbourne.com/post-operative-scar-tissue-soft-tissue-treatment>

BLEEDING DISORDER PHASE 1: DELAYED CLOTTING

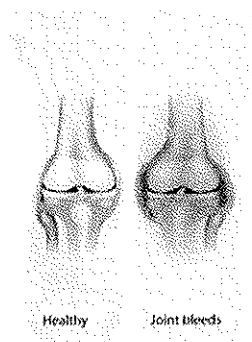


- Attempts to stabilize wound
 1. Blood vessel contracts
 2. vWD/or platelet defect → poor plug
 3. Factor deficiency or vWD → poor wall
- Clotting takes longer
- More blood accumulates in the joint

BLEEDING DISORDER

PHASE 2: MORE INFLAMMATION

- More blood = more inflammation, swelling, pain
- Large amount of enzyme released
 - Damages cartilage and bone
- New blood vessels grow INTO joint
 - Easily broken and can re-bleed
- Synovial lining thickens in response to workload
 - Joint stiffness and loss of ROM



https://www.zazzle.com/joint_bleeds_in_hemophilia_poster-228376992317867501

BLEEDING DISORDER

PHASE 3 & 4: DELAYED TISSUE REPAIR & REMODELING



- Cartilage does not heal itself
- Bone heals, but in different shape
- Hemarthropathy develops
 - Decreased movement
 - Decreased stability
 - Decreased comfort
 - Decreased function

<https://www.changinghemophilia.com/managing-hemophilia/lifestyle-tips/bleed-management-and-healthy-joints.html>

SO, HOW DO WE KEEP OUR JOINTS AS HEALTHY AS POSSIBLE...



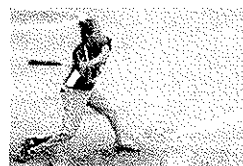
PREVENT JOINT BLEEDS!!!

- Prophylactic treatment if recommended by your hematologist
- Avoid NSAIDs and aspirin
- Eat healthy
- Get fit, stay fit
- Choose wisely - physical activities, sports, jobs, careers
- Manage stress positively

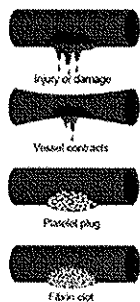


PROPHYLAXIS ('Prophy')

- Prevents joint bleeds/damage
- Factor deficiencies & vWD
- Adherence to schedule = effectiveness
- Various products available
- 'Personalized prophy' is ideal
- Considerations:
 - Severity of bleeding disorder
 - Lifestyle
 - Cost
 - Potential inhibitor development
 - Needle (phobia)
 - Who will perform the injection/infusion?



ASPIRIN & NSAIDS



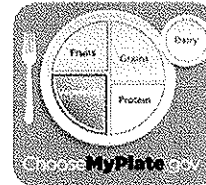
- Interfere with platelets
 - Aspirin – platelets won't work through remainder of platelet life
 - NSAIDS – platelets won't work for ~ 12 hours
- Will prolong active joint bleed
- May cause joint bleed
- May cause life threatening GI bleeds
- Discuss pain management options with MD or PT



<https://www.hog.org/handbook/section/5/taking-medicine>

EAT HEALTHY!

- Consider 'anti-inflammatory foods'
 - Stabilize insulin
 - Minimize 'bad fats'
- Weight management:
 - Excess weight causes progressive joint damage
 - 1# of weight = 5# of pressure on joint
- Tissue repair needs:
 - Water
 - Fruits, vegetables, whole grains, low fat protein
- Caution with herbs & vitamins



<https://www.health.harvard.edu/staying-healthy/foods-that-fight-inflammation>
<https://www.healthline.com/nutrition/13-anti-inflammatory-foods>

Pro-Inflammatory Foods

- Refined sugar:
 - Candy, cookies, cakes, pies, pastries, etc.
 - Soft drinks, energy drinks, sweetened tea, large glasses of juice
- Trans fat foods:
 - Fried foods
- Unhealthy fats:
 - Red meat
 - Full fat dairy products, shortening, lard
 - Heavy gravy, sauces
- Foods with a lot of added chemicals and/or processing
 - Processed meats
 - White flour, rice
 - Prepackaged snacks



<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2952901/>
<http://naturopathicbynature.com/anti-inflammatory-and-pro-inflammatory-foods/>

Anti-inflammatory Foods



- **Colorful Fruits & Vegetables:**
 - Carrots, tomatoes, leafy greens, peppers and sweet potatoes
 - Blueberries, cherries, oranges, papaya and strawberries
- **Healthy Fats (nuts and vegetable oils):**
 - Olive, canola, soybean and corn oil
 - Fatty fish such as salmon, mackerel, tuna and sardines
- **Whole Grains:**
 - Amaranth, barley, brown rice, buckwheat, corn, oats, rye and wheat
- **Herbs & Spices*:**
 - Basil, dill, oregano, parsley and sage; cinnamon, cumin, ginger*, paprika, saffron and turmeric*
- **Beverages:**
 - Coffee and tea



<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2952901/>
<https://www.health.harvard.edu/staying-healthy/foods-that-fight-inflammation>
<https://www.healthline.com/nutrition/13-anti-inflammatory-foods>
<https://www.arthritis.org/living-with-arthritis/arthritis-diet/anti-inflammatory/anti-inflammatory-diet.php>

HERBS & VITAMINS

Some herbs & vitamins may interfere with clotting

Discuss with your hematologist



- Ajoene
- Birch bark
- Cayenne
- Chinese black tree fungus
- Cumin
- Evening primrose oil
- Feverfew
- Garlic
- Ginger
- Ginkgo biloba
- Ginseng
- Grapeseed extract
- Milk thistle
- Omega 3 fatty acids
- Onion extract
- St. John's wort
- Turmeric
- Vitamins C & E



https://med.stanford.edu/content/dam/scv/ohns/documents/Sinus%20Center/Stanford_Medication_and_Herbs.pdf

GET FIT, STAY FIT

- Strong muscles protect joints & reduce risk of bleeds!
- Children:
 - Physical activity at least 60 min/day
- Adults:
 - Moderate physical activity at least 150 min/week
 - Moderate physical activity – can talk, but can't sing
 - Light resistive exercise 2-3 non-consecutive days/week
- Start low, progress slow
 - What do you like to do?
 - What do you have access to?



<https://www.hhs.gov/fitness/be-active/physical-activity-guidelines-for-americans/index.html>

PROPER FOOTWEAR

- Provides alignment, support, protection, comfort
- Best options:
 - Lace up shoes
 - Flexible forefoot
 - Good arch support (orthotics?)
 - Good cushioning
- If worn daily, replace every 6 months



<https://www.mayoclinic.org/healthy-lifestyle/fitness/in-depth/walking/art-20043892>
 Buldt AK, Menz HB. Incorrectly fitted footwear, foot pain and foot disorders: A systematic search and narrative review of the literature. *Journal of Foot and Ankle Research*. 2018; 11. <https://search.proquest.com/docview/2090527172?accountid=41004>. doi: <https://dx.doi.org/10.1186/s13047-018-0284-z>.

CHOOSE WISELY

Physical Activities & Sports

- Get fit, stay fit
- Avoid high contact/ collision physical activities & sports
- Use proper protective gear
- Educate coach, trainer
- Wear medical ID
- Have medication readily available

Jobs & Careers

- Consider less physically demanding options
- Consider medium-large companies (FMLA, STD benefits, health insurance)
- Plan ahead
- Focus on (re)education
- Use HTC, NHF, other resources to assist



MANAGE STRESS POSITIVELY!

Negative

- Overeating
- Smoking/vaping
- Poor sleep habits
- Self medicating with alcohol/drugs
- Gambling
- Other addictive behaviors

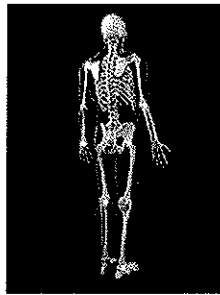
Positive

- Mindfulness
- Music
- Gentle yoga
- Exercise in moderation
- Hobbies
- Counseling
- Support group



<https://www.health.harvard.edu/mind-and-mood/six-relaxation-techniques-to-reduce-stress>
<https://www.heart.org/en/healthy-living/healthy-lifestyle/stress-management/3-tips-to-manage-stress>
<https://www.arthrosurface.com/fitnesshealth/10-things-joints-hurt/>

WHAT IF I GET A JOINT BLEED?



TREAT JOINT BLEEDS QUICKLY AND THOROUGHLY!!!

1. **Recognize** when a joint is bleeding
2. **Stop** the bleeding
3. **Protect** the joint from further injury/bleeding



RECOGNIZE A JOINT BLEED!






	JOINT BLEED	ARTHRITIS
Onset	Bubbling, tingling, heat	--
Pain	Tightness, gradually becomes a deep ache; may hurt at rest, pain increases with activity	Deep ache or sharp pain; hurts worse after prolonged inactivity, improves with light/moderate activity
Other signs	May have redness, warmth, stiffness, swelling	Same
Factor replacement	Significant improvement in pain 1-2 hours after taking; pain may return	Little/no improvement in pain 1-2 hours after taking
Ultrasound	Bloody fluid in joint space	Clear or no fluid in joint space

STOP THE BLEEDING!

- Infusing within 2 hours of bleed, joint damage unlikely
- If in doubt, infuse
- Take enough doses to prevent re-bleeding
 - Pain is not a good indicator of when the bleeding has stopped!
 - v with hematologist on dosing schedule
 - Infuse sooner = infuse less times



PROTECT THE JOINT!

P	Protect 	From further injury/bleed by using a sling, splint, brace, crutches, etc.
R	Rest 	Or Restrict from activity to prevent further injury/bleed
I	Ice ??? 	To reduce pain, 10-15 min every 2 hours
C	Compression 	Light compression to decrease swelling, pain; only if no numbness, tingling
E	Elevation 	Above the heart to decrease swelling and pain

<https://stepsforliving.hemophilia.org/sites/all/themes/stepsforliving/pdf/rice.pdf>
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3396304/>
 Bleakley CM. Acute soft tissue injury management: Past, present and future. *Physical Therapy in Sport*. 2013;14(2):73-4.
<https://search.proquest.com/docview/1349390644?accountid=41004>. doi: <http://dx.doi.org/10.1016/j.ptsp.2013.01.002>.

RETURN TO ACTIVITY GRADUALLY!

○ Activity:

- Too much activity, too soon → re-bleed
- Too little activity → weakness, increased risk for injury

○ Physical Therapy:

- Complex joint bleeds and/or return to sport
- If going to PT, inform HTC PT
- PT with bleeding disorders:
 - Lower and slower, but same end results
 - No heat
 - No passive ROM exercises
 - No deep massage or mobilization > grade 2



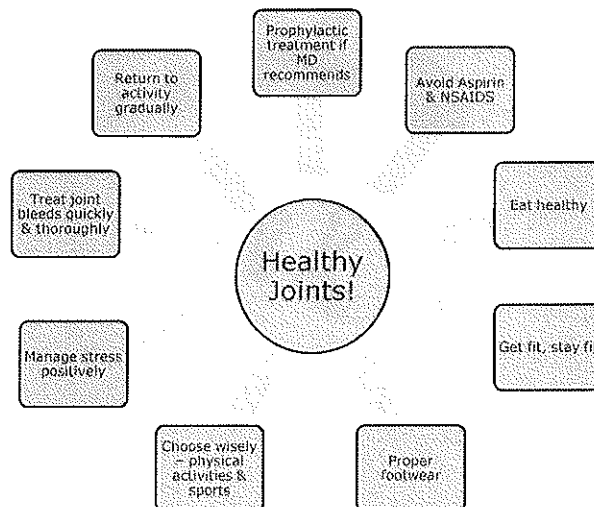
RETURN TO ACTIVITY GRADUALLY!

- o Acute bleed (~ 1-3 days):**
 - o Joint protection, **rest**
- o Subacute (~ 2 days – 3 weeks):**
 - o Joint protection, **light activity**
 - o Gentle ROM within pain free range, isometric strengthening exercises
- o Recovery (~ 3 days – 3 months):**
 - o Joint protection, **moderate activity**
 - o Progressive strengthening & cardio exercise, balance training
- o Sport training (~ 1 week – 6 months):**
 - o Joint protection, **vigorous activity**
 - o Advanced exercise for agility, power
 - o Sport specific training

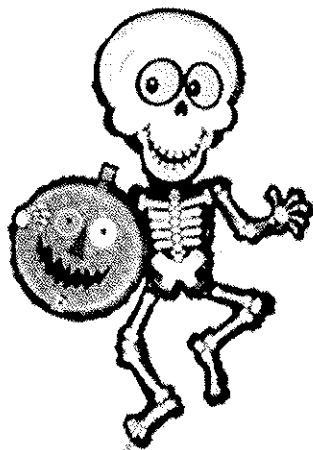
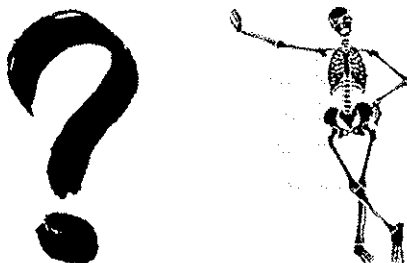


<https://www.ihc.org/userfiles/file/5-PT-Hemophilia-Care-Manual.pdf>
<https://www.ncbi.nlm.nih.gov/pubmed/20586796>
<https://bjsm.bmj.com/content/50/14/853.full>
<https://>

TAKE HOME MESSAGE



QUESTIONS



THANK YOU!