**JOINTS WORKBOOK**

**Key terms**

|  |  |
| --- | --- |
| **Term** | **Definition** |
| Joint | * Point of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ between two bones. * The point at which two bones \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. |
| ligament | * Connect \_\_\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_ and help stabilize joints. * Composed mostly of long, stringy \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ fibers. * Slightly elastic so they can be stretched and lengthened to increase flexibility. When overstretched may compromise joint integrity. |
| Tendon | * Tough and flexible bands of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ tissue that attach skeletal \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_\_\_. |
| to articulate | * To form a joint |

**Factors Affecting Joint Stability**

1. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
2. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
3. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
4. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**With a partner compare the hip joint and the shoulder joint on the basis of mobility and stability.**

**When is this an advantage?**

**When is it a disadvantage?**

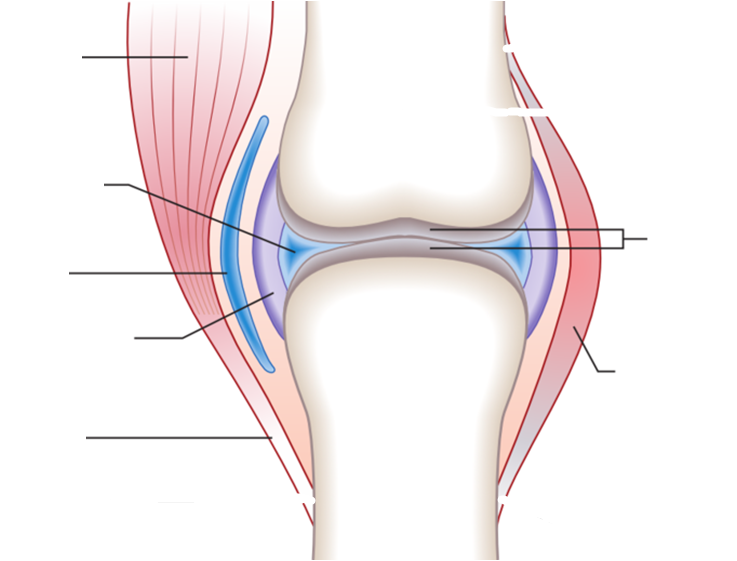
**Types of Joints**

|  |  |  |
| --- | --- | --- |
| **Type** | **Description** | **Example** |
| Fibrous | * Thin layer of fibrous tissue connecting the \_\_\_\_\_\_\_\_\_\_\_\_ of two bones. * Continuous with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. * No movement allowed at these joints. |  |
| Cartilaginous | * Bones separated by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ discs or thick layers of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ cartilage. * Limited movement allowed. |  |
| Synovial | * Most commonly occurring joint. * Most important for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. |  |

**Characteristics of Synovial Joints**

* **Joint cavity**
  + Space \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ bones
* **Synovial membrane**
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ joint cavity, except over the surfaces of the articular cartilage
  + Secretes the lubrication fluid (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)
* **Joint Capsule** 
  + Flexible to allow movement to take place.
  + May or may not have thickenings (intrinsic ligaments) to prevent joint dislocation.
* **Ligament** 
  + Support the joint and connect the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the joint
* **Tendon**
  + Attaches \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to bone
* **Articular Cartilage**
  + Smooth white layer that covers the articulating surface of bones
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, absorbs shock, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ bone
* **Fibrocartilage – menisci**
  + Semi-lunar discs that help bones fit together more \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + Also helps with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* **Hyaline cartilage**
  + A protective layer of dense \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ that covers the ends of the articulating bones

**Structure of a Synovial Joint –** label and annotate with definitions.



**The Bone Song** <http://www.youtube.com/watch?v=a0E5Nckxu5g>

*Verse 1*

*Verse 5*

28 \_\_\_\_\_\_\_\_\_\_\_\_\_ in my fingers and thumbs

And 44 bones already, still not done!

1 coxal – a hip,

1 \_\_\_\_\_\_\_\_\_\_\_\_\_ - a thigh,

2 \_\_\_\_\_\_\_\_\_\_\_\_\_ are kneecaps – my, oh my!

*Verse 6*

\_\_\_\_\_\_\_\_\_\_\_\_\_ and fibula in each shin,

Tibia’s fat, and \_\_\_\_\_\_\_\_\_\_\_\_\_ thin!

Each ankle has 7 \_\_\_\_\_\_\_\_\_\_\_\_\_ bones

Twist them, sprain them, hear them groan!

*Verse 7*

10 \_\_\_\_\_\_\_\_\_\_\_\_\_ in the balls of my feet.

28 \_\_\_\_\_\_\_\_\_\_\_\_\_ in my toes..that’s so neat!

How many bones is that, you ask?

Well, add them them up…..

And complete the task!

206!!!!!!!

14 bones make up my face

The \_\_\_\_\_\_\_\_\_\_\_\_\_ bones surround an empty space.

No that’s not right, they’re protecting my brain!

Where was I let’s start again.

*Verse 2*

22 bones under my hair;

3 \_\_\_\_\_\_\_\_\_\_\_\_\_ in each ear.

The \_\_\_\_\_\_\_\_\_\_\_\_\_ bone inside my throat.

Who knew that? Let’s make a note!

*Verse 3*

26 \_\_\_\_\_\_\_\_\_\_\_\_\_ in my spine,

24 \_\_\_\_\_\_\_\_\_\_\_\_\_ in this chest of mine,

The \_\_\_\_\_\_\_\_\_\_\_\_\_ keeps them all apart,

They’re protecting my lungs and my heart.

*Verse 4*

2 bones in each shoulder, front and back.

3 in each arm, it’s the muscles I lack!

8 \_\_\_\_\_\_\_\_\_\_\_\_\_ that make up each of my wrists

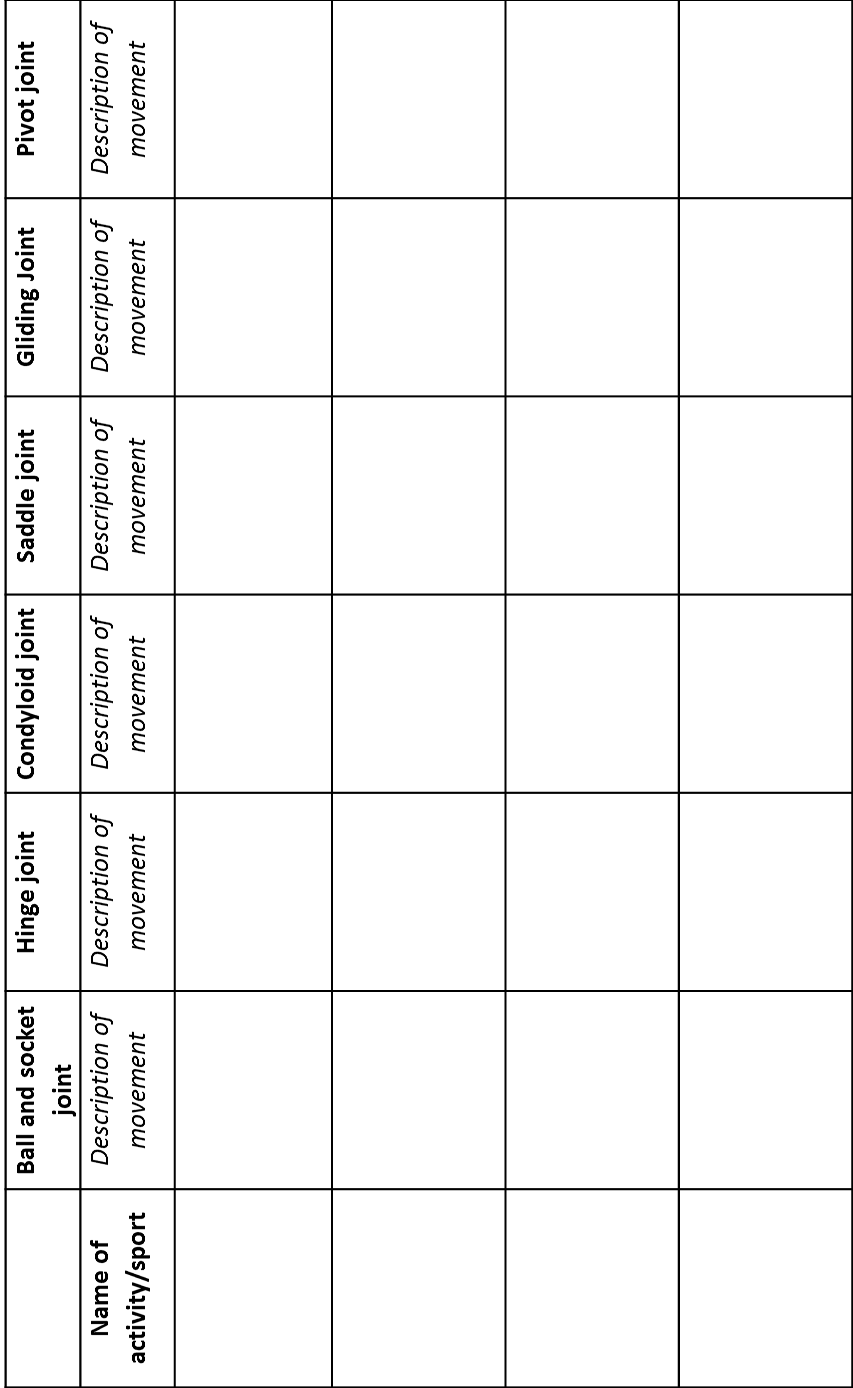
5 \_\_\_\_\_\_\_\_\_\_\_\_\_ per palm, how’s our list?

**Different Types of Synovial Joints**

|  |  |  |  |
| --- | --- | --- | --- |
| **Joint Type** | **Movement at joint** | **Examples** | **Structure** |
| Hinge |  |  |  |
| Pivot |  |  |  |
| Ball and socket |  |  |  |
| Saddle |  |  |  |
| Condyloid |  |  |  |
| Gliding |  |  |  |

**Partner Activity - Movement at synovial joints**

Explain the movements occurring at each **synovial joint** during four different types of physical activity.



Skipping

Serving a tennis ball

Throwing a baseball

A penalty kick in football

**Bone Injuries - webquest**

1. STRAINS AND SPRAINS

*Go to* [*http://www.hughston.com/hha/a.strain-sprain.htm*](http://www.hughston.com/hha/a.strain-sprain.htm)

What is the difference between a SPRAIN and a STRAIN?

2. ARTHRITIS: TWO TYPES

1. Osteoarthritis [*http://www.medicinenet.com/osteoarthritis/article.htm*](http://www.medicinenet.com/osteoarthritis/article.htm)
   * Description/Cause:
   * What are “bone spurs” and how are they associated with OA?

[*http://www.mayoclinic.com/health/bone-spurs/DS00627*](http://www.mayoclinic.com/health/bone-spurs/DS00627)

* + How does this relate to the overload principle?

1. Rheumatoid Arthritis

[*http://www.arthritis.org/about-arthritis/types/rheumatoid-arthritis/*](http://www.arthritis.org/about-arthritis/types/rheumatoid-arthritis/)

* + Description of rheumatoid arthritis:
  + How does RA differ from OA?

3. BONE FRACTURES: [*http://www.medicinenet.com/fracture/article.htm*](http://www.medicinenet.com/fracture/article.htm)

a. Greenstick fracture: (draw and define)

b. Comminuted fracture: (draw and define)

1. Compound fracture: (draw and define)

4. WHAT´S UP WITH THE PHRASE ‘DOUBLE-JOINTED? –CAN YOU EXPLAIN WHAT IT MEANS?

<http://www.personal.psu.edu/afr3/blogs/SIOW/2010/09/why-are-some-people-double-jointed.html>

5. CRACKING YOUR KNUCKLES?… (be sure to visit BOTH sites)

[*http://www.livescience.com/health/060710\_mm\_joints\_crack.html*](http://www.livescience.com/health/060710_mm_joints_crack.html)

[*http://www.physorg.com/news64162917.html*](http://www.physorg.com/news64162917.html)

a. What are the different explanations behind what causes the “popping” sounds associated with joint-popping?

b. Can cracking your knuckles cause arthritis?