**1. Product Category**Exercises and devices for musculoskeletal health and performance.

The product category in this context extends beyond traditional products and includes medical services, specialists, therapeutic exercises, training exercises and patient education related to orthopedic injuries. Orthopedics covers a wide range of conditions affecting the musculoskeletal system, including but not limited to bone fractures, joint issues (like arthritis), spinal disorders, and sports injuries. Each of these subcategories could themselves be rich topics for a knowledge graph.

**Knowledge Graph Components**

**Entities (Nodes), Labels, Attributes**

| **Example Entities** | **Label** | **Attributes** |
| --- | --- | --- |
|  | Exercises |  |
|  | Devices |  |
|  | Musculoskeletal Injury |  |
|  | Muscle Groups |  |
|  | Joints |  |
|  | Users - patients or athletes |  |
|  | Diagnostic Testing |  |

**Edges (examples)**

treats

works out

limits

prevents

increases endurance

increases strength

**Example Relationships**

There is an inherent overlap between therapeutic and athletic exercises and these relationships lend themselves to Knowledge Graphs. Working out is most genetically seen as a way to increase strength or endurance. However, many related or identical exercises also prevent or improve orthopedic injury. There are also a variety of devices that

**2. Potential Data Sources**

* **Medical Research Papers:** Databases like PubMed or Google Scholar can provide access to the latest research on treatments, diagnostics, and rehabilitation methods for various orthopedic conditions.
* **Product Reviews:** Websites like Amazon for reviews on supportive products like braces, orthotic devices, and rehabilitation equipment.
* **Specialist Directories:** Databases from medical associations or health insurance portals which list orthopedic specialists and their expertise areas.
* **Patient Forums:** Websites like HealthUnlocked or Patient.info where patients share their experiences, treatments, and outcomes.
* **Hospital and Clinic Reviews:** Yelp or Google Reviews can be scraped to find information about specific hospitals’ orthopedic departments.

**3. Concerns and Considerations**

* **Data Availability and Accessibility:** Ensuring that the data is comprehensive and covers various facets of orthopedics.
* **Data Privacy and Ethics:** Especially important given the medical nature of the data. Compliance with regulations like HIPAA in the U.S. when handling patient data is crucial.
* **Quality and Reliability of Data:** Ensuring that the data sourced is from reputable providers and is up-to-date.

**4. Application of the Knowledge Graph**

* **Diagnosis Aid:** Helps users input symptoms and receive potential diagnoses, directing them to appropriate specialists.
* **Therapy Recommendations:** Based on diagnosed conditions, it can suggest physical therapy exercises, and lifestyle modifications.
* **Specialist Finder:** Integrating reviews and locations to help users find the best nearby orthopedic specialists.
* **Educational Resource:** Provide information on preventive care and general orthopedic health education.

**5. Potential Users**

* **Patients:** Seeking diagnosis, treatment options, and specialist recommendations.
* **Healthcare Professionals:** Doctors, therapists, and clinicians could use it to stay updated on the latest therapies and research.
* **Healthcare Students:** A resource for learning and understanding various orthopedic conditions and treatments.

**6. Potential Forms of the Application**

* **Web Application:** Accessible on various devices, providing a comprehensive interface for all features.
* **Mobile App:** A more accessible version focused on quick information retrieval and specialist locator functionality.
* **API:** For integration with other healthcare systems, allowing them to leverage your knowledge graph for enhanced patient care.

**Summary of Interactive Browsing Learnings**

Wide range of information, but the challenge will be in validating the reliability of these sources and structuring this data into a usable format for our knowledge graph.

<https://github.com/FarisRaza1/459FinalProject>

**References**

**https://www.sciencedirect.com/science/article/pii/S2666827023000609**