Joint Juice: A Low-Cost Task Trainer for Joint Access

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Unpracticed* clinicians performing joint aspiration and injection need to improve procedural competence in order to successfully enter the joint space and minimize damage to surrounding anatomical structures**.

Clinical Background
Joint access is essential for both joint aspiration and injection and is used for the diagnosis of joint conditions and to provide therapeutic relief to inflamed joints.

Existing hand and wrist simulators have minimal functionality at high cost. Many trainees perform their first procedure on live patients, causing damage to the patients’ joints.

Our Solution
- Ultrasound-ability
- Biofidelity
- Visual Feedback

Needs Criteria

<table>
<thead>
<tr>
<th>Must Have</th>
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<tbody>
<tr>
<td>1 Avoid injuring anatomical structures</td>
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<td>2 Increase viable sample amount</td>
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<td>3 Accurate Physiology</td>
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Workflow

Medical School → Begin Residency → Practice on Joint Simulator → Successful Live Procedure

Unpracticed* having completed less than 10 previous procedures or having over 6 months between procedures; ** including tendons, nerves, vasculature and bones

Arthrocentesis procedure Villa-Forte, Merck Manual (2020)