Knife Guide Arthritis Aid
DESIGN RATIONALE

Makers Making Change
A Neil Squire Program

Introduction

The Knife Guide Arthritis Aid is a handle that attached to the back of a knife that allows a user to use both hands and requires less grip strength for the same amount of control. It is designed for users with arthritis that have difficulty gripping the handles of knives.

Research

Name	Image	Price	Link
Commercial			
Easi-Grip Arthritis Fork Knife		$17.95	Link
Swedish Serrated Knife		$45.95	Link
DIY			
3D Printable Knife Guide Arthritis Aid		N/A	Link

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Requirements

Goals

G01	Create a handle that allows arthritis uses to use a knife

Functional Requirements

F01	Device must firmly hold onto the knife
F02	Device must have a more natural grip position
F03	Device must not block use of the knife

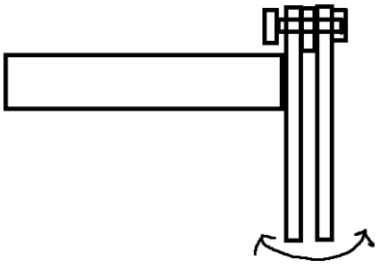
Constraints

C01	Device must be printed in one piece with no supports

Prototyping

Version 1: Original Design

- Two flat plates with a spacer between them, connected by two bolts with a handle on one plate
- When the screws are tightened, the plates angle and separate at the bottom, preventing them from gripping the blade



Version 2: Modified Design

- The plates were modified so they had a taper that would keep the plates parallel after the screws are tightened
- The plates still were loose after the screws were tightened

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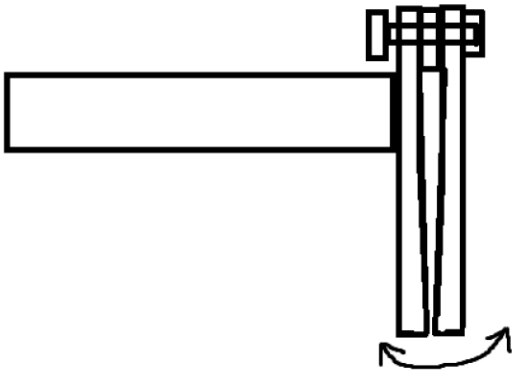

Version 3: Magnet Design

- One piece print in place design
- Pockets for magnets to be inserted on the outside
- Knife thickness is a parametric variable that can be changed
- Most force is on the downstroke, the magnets keep the handle on the knife on the upstroke, but not expected to have to bear significant force
- Covers much less of the blade, allowing it to be used on non-chef knives

Testing

After assembling the final magnet version, it was found to stay on the knife well, and it left a usable amount of the knife exposed. Gorilla glue was chosen as the glue, since it is food safe, as well as being less brittle to resist the shock of being dropped.

Opportunities for Improvement

The handle could be rotated 90 degrees to be vertical, as seen on some commercial arthritis knives.