The Spring Loaded “Willins” Cane

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A description of a long cane handle adaptation that reduced the jarring movement experienced when contacting an object. Initially designed to allow a woman with arthritis and tendonitis to use her cane, this ‘Willins’ cane has also been used by those moving over uneven ground as well as individuals simply wishing for smoother cane travel. Instructions are provided to create the cane handle.

Introduction

The ‘Willins’ cane was originally designed for use by a client who is an active woman in her mid-60s with arthritis in both hands and spine. The result of the arthritis was that she experienced pain in her hands when gripping objects and pain in her back, particularly when travelling over uneven ground. The client had used a variety of aids in the past, including a Guide Dog and a mobility cane with a padded handle. She had recently developed tendonitis, making the traditional mobility cane difficult to use because of the pain caused by the (a) wrist movement involved in establishing an arc, and (b) jarring effect when the cane tip rolled over an uneven surface, particularly when contacting an object.

Initial solutions

Adaptations already in use in the field were investigated. A number of adaptations based on a T bar at the base of the cane were made in response to the clients’ inability to arc the cane. Padded handles were added that allowed greater comfort and ease of use for someone with arthritis.

The ‘Kinetic’ cane was also trialed which has a T bar at its base and a comfortable ball-type grip that would slide down the shaft when contacting an obstacle. It was believed that this cane would reduce the issues of a painful arc movement and jarring (Figure 1).

While the client liked the idea of the Kinetic cane, she found that the T bar at the base was too cumbersome for the speed she walked. However, the handle, which was designed to slide down the shaft of the cane, was effective in stopping the jarring. The
ball-type grip used on the Kinetic cane was comfortable to hold, but the client found the need to stop and pull the handle back up the shaft both frustrating and time consuming.

The client required a cane that offered the comfort and decrease in jarring which was a feature of the Kinetic cane while allowing fast travel by returning the handle to the starting point each time it slid down the shaft. The cane would also need to allow an adequate arc width with minimal wrist movement.

**Adapting the cane**

A spring was added to a Kinetic cane handle, in effect making a shock absorber through which the handle could move up and down the shaft in response to the ground surface. The client was able to detect the ground surface, but did not experience jarring through her wrist.

The client still preferred to place her index finger along the handle of the cane for increased control over the arc. However, her index finger was in danger of being pinched by the spring. To solve this problem the ball grip was removed and a length of 15mm Polyvinyl Chloride (PVC) pipe was cut and attached making the movable handle long enough to protect an extended index finger (Figure 2).

The client was able to use her wrist slightly and was also able to push the cane with her index finger. It was found that because the new handle had a slightly larger internal diameter than the cane shaft, her arc movement was a little wider than it would have been with a standard handle. In order to increase the arc, a heavier Jumbo roller tip was attached that, due to its weight, rolls further than the lighter tips.

Eventually the client’s tendonitis improved and she preferred to use a lighter rolling Supaball tip. The client also had increasing wrist movement and was able to maintain an adequate arc.

**Refinement**

Initially the adapted cane worked well, however with continued use some problems arose. For example, the rubber washer first used was too narrow and the PVC handle had gradually been pushed over it so that the handle became stuck. The “shock absorber” idea, however, worked effectively.

The cane handle was redesigned whereby a larger metal washer was added to the cane and glued in place alongside a rubber grommet which adhered well to the shaft. Further, padding covered the PVC pipe and was tailored to the client’s specifications. By simplifying the design, the result has been a stronger and more aesthetically pleasing cane. Instructions for the improved handle follow (Figure 2).

**Instructions for making the ‘Willins’ cane handle**

Although the measurements given apply to a standard Bevria cane, the idea can be used with any brand of cane. You need:

- 1 x C756 compression spring
- 1 x 0.5 inch grommet
- 2 x 0.5 inch washers (metal)
- 1 x 15mm wide PVC tubing
- 1 x chair stopper
- 1 x roll of Traction Grip (available at sports stores).
1. Remove the original cane handle by slicing the handle up the length and peel away from the cane
2. Slide the grommet onto the cane and secure with Araldite (or any effective glue)
3. Slide a 0.5 inch metal washer on to the cane and secure with Araldite
4. Slide on the spring
5. Slide on the second washer
6. Cut the PVC tubing to length. Allow room for the stopper
7. Coat the PVC handle with Traction Grip tape (to the desired thickness)
8. Slide the PVC handle onto cane
9. Put a hole in the stopper
10. Pull the elastic from the cane through the hole you made in the stopper
11. Fit the stopper to the top of the cane
12. Fit the roller tip on the end of the cane (Figure 3).

**Conclusion**

The spring loaded “Willins” cane was inspired by the concept of a shock absorber (Figure 3). That is, the handle absorbs the movement rather than the client’s wrist, making cane travel smoother and less painful for the client.

The author encourages anyone who has a client requiring an alternative aid to look at other adaptation’s and consider whether or not there is any part of them that can be used in your own design. If there is, great, there is your starting point. If not, go and create something effective and wonderful then share the idea. Who knows, your design (or part of it) could end up being perfect for someone else!
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