



## Analysis of Different Types of Walking Hand Stick

Swati Khatkar<sup>1</sup>, Dr. Promilakrishna Chahal<sup>2</sup>

<sup>1</sup>Student, <sup>2</sup>Assistant Scientist

<sup>1,2</sup> Department of Family Resource Management, COHS  
Chaudhary Charan Singh Hararyana Agricultural University, Hisar

---

### ABSTRACT:

Lots of aging people rely on a walking hand stick as a help device to avoid many problems, such as balance loss, leg weakness, presumed to be at the origin of many fall incidents. The purpose of this present study was to analyze the three different types of walking hand sticks i.e. wooden hand stick, steel hand stick and four leg hand stick. A complete evaluation was done on the sticks with help of respondents. Walking was performed for five minutes with each hand stick and evaluate on the basis of their walking experience. Self structured schedule was developed to study, evaluate and analyze the walking stick. Findings were analyzed, discussed and reported. Experiment have revealed that which walking hand stick is best one among three.

---

---

### INTRODUCTION

Walking can become difficult for people due to age, injuries disability or medical reasons such as the consequences of a stroke. Due to ageing process, among the elderly problem mostly found is the capability to walk decline because of loss of some of the muscles fibres that make up the muscles which then affect the muscular movements and body balance (Saptari *et al.*, 2019). It makes the elderly people requires greater muscular strength compared to other age groups so that they can easily move and perform daily routine without difficulties.

Thus several works are devoted to the study and development of assistive devices. Since long time ago, the well-known canes/walking sticks or crutches are used to compensate temporary or even permanently a weakness in the lower limbs. Furthermore these assistive devices can sometime improve the walking activity, especially in the case of cerebral disorders. The canes/walking sticks are the most commonly used type of mobility aid than crutches (Arakelian and Wenger, 2019).

Walking stick may be a good assistive device to support the elders and enable them to overcome many of the motion-related problems (e.g., walking, stair climbing, changing posture, pain and discomfort, etc.). In previous studies, researchers pointed out that maintaining mobility is one of the preventive methods against falls, and fear of falling has been identified as an important factor that leads to activity restriction. Some studies said that cane is often bought for balance and support which in turn overcomes falls and fear of fall. Others studies have argued that the use of the walking stick may actually increase the risk of falling by causing tripping or impeding on the balance control mechanisms after a perturbation. It has also been reported that 30–50% of people abandon their device soon after receiving it.

Elderly who falls down should be treated seriously as it often results in other serious illness, thus mobility aid is needed as a support for elder's daily ambulation. Cane is considered as the basic of mobility aids and most frequently used by the elder's to assist in their daily mobility. There are many cane design in the market which has different functionality for different target user, for example: cane that allow support to user with difficulties in transition from sit to stand position and cane that has ergonomically designed handle dedicated to user with arthritis problems (Wong and Yong, 2018).

Today, walking sticks are overwhelmingly used by the elderly individuals who need assistance in walking. By holding a stick or cane either in the dominant hand or in the hand opposite to the weakness or injury, the user can shift his or her weight away from the weaker side of the body (Sengupta *et al.*, 2020).

Objectives :

- To study the existing usage pattern of walking hand stick

## METHODOLOGY

Present study was conducted in Assandh (Karnal), Haryana. To study the walking hand stick, I have designed an experiment which was done on four old age women, in which each women had to walk with each walking stick for 5 minutes and analyzed. 15 factors for each walking hand stick were taken. After analysis each women had to tell that with what factors of each walking hand stick she satisfied the most, somewhat satisfied or not satisfied. On the basis of this it was concluded that which stick was best one to use as per the observation and structured questionnaire. The study was carried out by gathering data through observation method, asking them and the structured questionnaire. The observed data were tabulated and analysis of data were made.

15 factors of walking hand stick	
Design of hand stick	Grip of the hand stick
Level of comfortable	Anti – slippery
Is easy to use	Easy to store
Weight of the hand stick	Useful in climbing
Width of the hand stick	Useful for indoor activity
Easily accessible and safe	Useful for outdoor activity
Sound effective	Easy to clean and maintain
Overall liking of the hand stick	

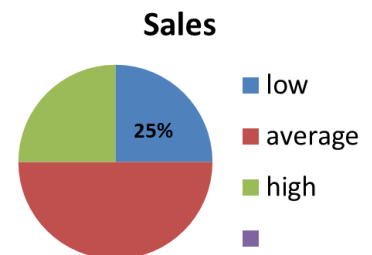
## FINDINGS AND DISCUSSION

The findings from the present study was presented and discussed below:

It is clear from table 1, that 25 % respondent low satisfied with the use of wooden hand stick, 50% of the respondent were average satisfied with the use of the stick and 25 % respondent were highly satisfied with the use of wooden hand stick.

**Table : 1**

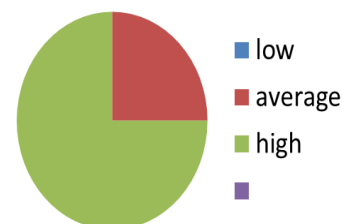
Rank	Range	R 1	R 2	R 3	R 4
Low	15-25	✓			
Average	25-35		✓		✓
High	35-45			✓	



So, from table 2, it was reported that 25 % of the respondents were average satisfied with the use of steel hand stick and 75% of the respondents were highly satisfied with the use of the steel hand stick.

**Table : 2**

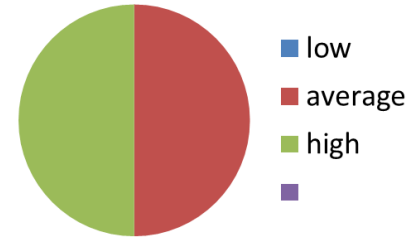
Rank	Range	R 1	R 2	R 3	R 4
Low	15-25				
Average	25-35			✓	
High	35-45	✓	✓		✓



The observation recorded from table 3, is that 50% of the respondents were average satisfied with the use of four leg har respondents were highly satisfied with the use of four leg hand stick.

**Table : 3**

Rank	Range	R 1	R 2	R 3	R 4
Low	15-25				
Average	25-35			✓	✓
High	35-45	✓	✓		



After, the study of the three different types of walking hand stick, it was found in table 4 and table 5 that steel hand stick was highly preferred among the old age citizen. Very less preferred stick by old age citizen was wooden hand stick. Wooden hand stick was highly (20%) satisfactory for R3 and moderately (60%) satisfactory for R2 & R4 and less (20%) satisfactory for R1. Steel hand stick was highly (75%) satisfactory for R1, R2, R3 and moderately (25%) satisfactory for R3. And Four leg hand stick was highly (50%) satisfactory for R1,R2 and moderately (50%) satisfactory for R3 and R4.

**Table : 4**

Stick Name	Steel Hand Stick	Four Leg HandStick	Wooden HandStick
<b>Rank</b>	<b>1</b>	<b>2</b>	<b>3</b>

**Table : 5**

	Wooden stick	Steel Hand Stick	Four Leg Hand Stick
Respondent 1	Less satisfied	Highly satisfied	Highly satisfied
Respondent 2	Moderately satisfied	Highly satisfied	Highly satisfied
Respondent 3	Highly satisfied	Moderately satisfied	Moderately satisfied
Respondent 4	Moderately satisfied	Highly satisfied	Moderately satisfied

## CONCLUSION :

The study concluded that the user's found steel stick was best one in use among three walking stick. They liked most of the factors like easy to use , comfortable, anti-slippery, easy to maintain etc. of steel walking stick more as comparison to others. 75% of the respondents were fully satisfied with the steel hand stick and rest of 25% were moderately satisfied. Four leg walking hand stick was second preferred by the respondent and wooden hand stick was the least preferred by the respondents due to some factors.

## REFERENCES

- Arakelian, V. and Wenger, P. (2019). Study of the walking efficiency of a human with a cane. *Romansy – Robot Design Dynamics and control*, pp.370 – 379.

- 
- Saptari, I., Halim, M. and Fauzi, A.M. (2019). Hand Parameters and Walking Stick Design: A Case Study among Elderly Malaysians. *International Journal of Human and Technology Interaction*, 3(1): 2590-3551.
  - Sengupta, P., Mondal, K., Mahata, H. and Dhara, P. (2020). Evaluation of walking sticks and recommendations for modified walking stick. *Indian Journal of Physical Medicine and Rehabilitation*, 30(3):69-73.
  - Wong, Y. and Yang, S. (2028). Cane design : A preliminary research concerning on cane and elderly users. *International Journal of Social Science and Humanity*, 8(1): 31-40.
  - Saptari, I., Halim, M. and Fauzi, A.M. (2019). Hand Parameters and Walking Stick Design: A Case Study among Elderly Malaysians. *International Journal of Human and Technology Interaction*, 3(1): 2590-3551.