Physical Characteristics of Ageing Population for Products Design(1)

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1. Introduction

The aging population is increasing in the world. This trend is the same in Korea. The growth rate of aging population is much higher than other countries. For instance, the segment of the population 65 years of age and older accounted for 7.3% of whole population and it is forecasted to increase in Korea to 14% in 2023. In order to promote the ergonomic design concept of the products for aging population, we will endeavor here to define new research concepts for these silver products. However, unfortunately the research on aging in Korea is still in the cradle phase. Most of national strategies on aging population focus on welfare and safety. In this paper it is intended to discuss the necessary of the ergonomic design and of the standards for the product items of the aging population. The objectives of this study is to evaluate the quality and design on walking sticks with four legs and also to investigate the information of the manufactured items targeting for aging population.

2. Methods

This study was conducted by comparing the international and national standards of other countries and evaluating the differences in the point of view of ergonomics. The size specification and the quality of the walking sticks with four legs from each manufacturer was also compared. This study also gives the requirements relating to safety, ergonomics, performance, marking and labeling

3. Results

To specify the safety and capacity of walking sticks, international Standard ISO 11334-4 was prepared and revised. The walking stick shall be tested for stability, separation, static loading and fatigue, in following sequence. Table 1 shows the contents of the walking sticks.

3.1 Definition of the terms

walking stick with three or more legs and a handle is consist of handgrip, telescoping members, side leg, rear leg, tip, front leg, height-adjusting and and locking device. For the safety, walking stick depth and width are very important elements to encourage the walk-aids. . It can provide the user more psychological stability and comfort.

3.2. Function

The walking sticks should meet the following general design requirements and functional requirements. The handgrip width shall be not less than 25 mm and not more than 50 mm. The handgrip shall be replaceable or easy to clean. The leg section shall end in tips of a design which will prevent the legs from piercing. That part of the tip in contact with the walking surface shall have a minimum diameter of 35 mm. The means of height adjustment shall not work loose when the walking stick is in use. The height adjustment mechanism shall be clearly marked with its maximum extension as specified by the manufacturer. The telescoping members shall exhibit an easy running fit. Minimum vertical clearance at the center of the base, with the height adjustment at its minimum, shall be 120 mm.

3.3 Materials

Structural load-carrying members moulded from plastic materials should be produced from virgin materials. If recycled materials are included, the components shall retain equivalent strength throughout the life of the walking stick.

References

- 1) ISO 11334-4, Walking sticks with three or more legs. 1999.
- 2) Youngsuk Lee : The measurement of man, Korea, 1999.
- 2) Youngsuk Lee : The measurement of woman, Korea, 1999

Table 1. The specification of the walking sticks

walking sticks	specification	labeling
A616-00	Product Size: Base: 6" x 7 3/4" Weight Capacity: 250 lbs (113.4 kg) Height Adjustments: 28 1/2" to 37 1/2" Tip size: 5/8" Case Pack: 2 UPC: 086876149098	The Explorer?Cane has a comfortable contour handle. Quad canes are ideal for people who are independent enough to use a one-hand walking aid, but still need the stability that four points of floor contact can provide. Adaptable for right- or left-hand use, quad canes have a low center of gravity for increased stability and balance. The small base size model can be used on stairs, while the large base size model offers increased support.
A617-00	Product Size: Base: 8" x 12" Weight Capacity: 250 lbs (113.4 kg) Height Adjustments: 28 1/2" to 37 1/2" Tip size: 5/8" Case Pack: 2 UPC: 086876149104	The Explorer?Cane has a comfortable contour handle. Quad canes are ideal for people who are independent enough to use a one-hand walking aid, but still need the stability that four points of floor contact can provide. Adaptable for right- or left-hand use, quad canes have a low center of gravity for increased stability and balance. The small base size model can be used on stairs, while the large base size model offers increased support.
A734-C0	Product Size: Base: 6" x 7 3/4" Weight Capacity: 250 lbs (113.4 kg) Height Adjustments: 28" to 37" (71.1 cm to 94 cm) in 1" (2.5 cm) increments Tip size: 5/8" Case Pack: 2 UPC: 023601128010	Quad canes are ideal for people who are independent enough to use a one-hand walking aid, but still need the stability that four points of floor contact can provide. Adaptable for right- or left-hand use, quad canes have a low center of gravity for increased stability and balance. The small base size model can be used on stairs, while the large base size model offers increased support.
A736-00	Product Size: Base: 6" x 7 3/4" Weight Capacity: 250 lbs (113.4 kg) Height Adjustments: 28" to 37" (71.1 cm to 94 cm) in 1" (2.5 cm) increments Tip size: 5/8" Case Pack: 1 UPC: 023601073600	An Offset Handle provides additional balance because the hand rests directly over the shaft of the cane. Quad canes are ideal for people who are independent enough to use a one-hand walking aid, but still need the stability that four points of floor contact can provide. Adaptable for right- or left-hand use, quad canes have a low center of gravity for increased stability and balance. The small base size model can be used on stairs, while the large base size model offers increased support.
A738-C0	Product Size: Base: 8" x 12" Weight Capacity: 250 lbs (113.4 kg) Height Adjustments: 28" to 37" (71.1 cm to 94 cm) in 1" (2.5 cm) increments Tip size: 5/8" Case Pack: 2 UPC: 023601129017	Quad canes are ideal for people who are independent enough to use a one-hand walking aid, but still need the stability that four points of floor contact can provide. Adaptable for right- or left-hand use, quad canes have a low center of gravity for increased stability and balance. The small base size model can be used on stairs, while the large base size model offers increased support.
A740-C0	Product Size: Base: 8" x 12" Weight Capacity: 250 lbs (113.4 kg) Height Adjustments: 28" to 37" (71.1 cm to 94 cm) in 1" (2.5 cm) increments Tip size: 5/8" Case Pack: 2 UPC: 023601129604	An Offset Handle provides additional balance because the hand rests directly over the shaft of the cane. Quad canes are ideal for people who are independent enough to use a one-hand walking aid, but still need the stability that four points of floor contact can provide. Adaptable for right- or left-hand use, quad canes have a low center of gravity for increased stability and balance. The small base size model can be used on stairs, while the large base size model offers increased support.
A787-C0	Product Size: Base: 6" x 7 3/4" Weight Capacity: 250 lbs (113.4 kg) Height Adjustments: 28" to 37" (71.1 cm to 94 cm) in 1" (2.5 cm) increments Tip size: 5/8" Case Pack: 2 UPC: 023601128027	Quad canes are ideal for people who are independent enough to use a one-hand walking aid, but still need the stability that four points of floor contact can provide. Adaptable for right- or left-hand use, quad canes have a low center of gravity for increased stability and balance. The small base size model can be used on stairs, while the large base size model offers increased support.