# MODIFIED BABY WALKER

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## ABSTRACT

*This paper tells us about how baby walker is useful to baby for proper walking and balancing. Baby walker is generally used by small infants or baby who can't walk by their own. Use of baby walker is more popular all over the world and rate of its use ranges from 42% to 86%.The age of use starts from 4 to 15 months with no difference in sex.there are two types of baby walker viz ,stationary baby walker and movable baby walker. The reported reasons for its use were many, but mainly was the parental belief that they promote the child's development especially walking. Baby walker present in market are not medically safe, babies do not learn how to balance to keep from falling, the baby's hips bow out, not give proper support to baby. In our model we removed these drawbacks by giving support to chest and removing lower side support. Pangulgada (pushing cycle) is not present in baby walker and is rarely found in surrounding. We used this feature in our baby walker for proper walking and development of baby. Many parents believe that such walker teaches their child to walk faster however they may actually delay working by 2 to 3 weeks for a typical child amount this use matters for every 24 hours baby spend in a walker. Hence we are going to remove the problems mentioned above in our model. Proper support to baby, height adjustable, pangulgada (pushing cycle) are main important aspects and advantages of our model.*

**Keywords:** *back support, belt, wheel, ring etc…*

## 1. Introduction:

Baby walker is used by small child for proper walking and balancing itself. But nowadays baby walker present in market does not satisfy this condition satisfactorily. It causes various injuries to baby. The aim of our study is to find out the incidents of injuries associated with the use of baby walker and to reduce it by making changes in design in baby walker in baby's safety point of view. Generally baby walker is used for a small baby who is 4 to 15 months old. But in our nation people uses baby walker till the age of 2 years. When a baby trying to stand up or trying to walk by its own at first stage of start baby falls down that increases the chances of physical and mental injuries to a baby. We improved the drawback like necessity of proper support back support is provided. By providing proper back support baby can easily walk and stand. It also avoids accident. Problems

occurred due to traditional baby walker such baby's hips bow out, toes turn in, proper support can be cured by new design of our baby walker.

**2. Design and Calculation:**

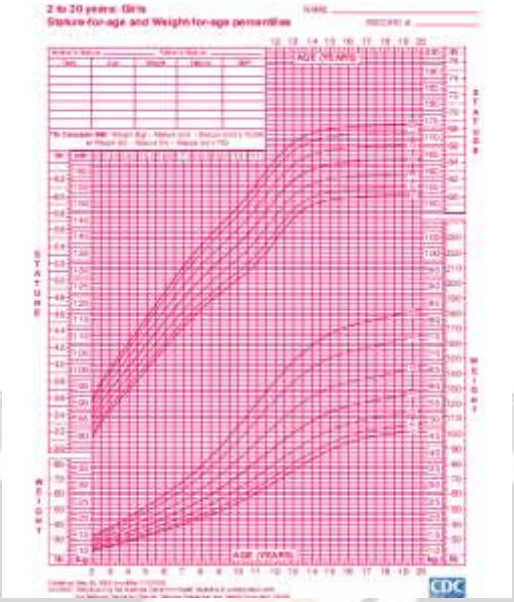

**Fig 2.1:** Age to weight ratio for girls

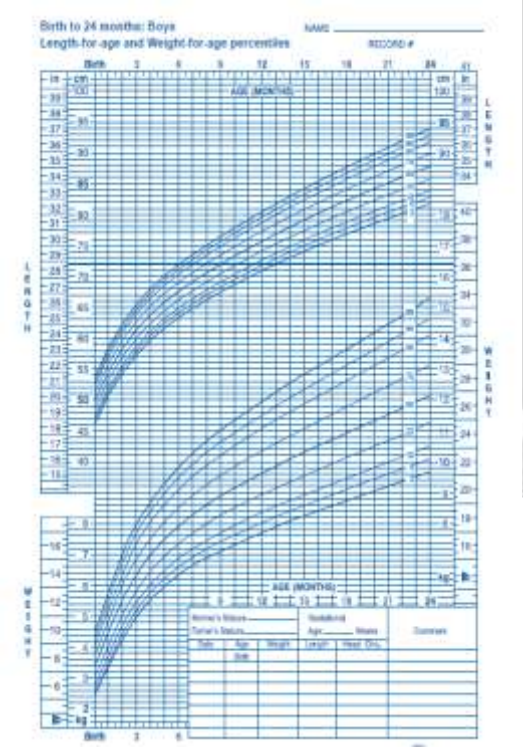

**Fig 2.2:** Age to weight ratio for boys

**Material for Back Support:**

Fibre on which sponge is enveloped to produce cushioning.

**Material for Belt:**

Cotton and sponge are materials that can be used for belt. Cotton elastic belt with outer layer made up of sponge.

**Material for Wheel:**

Wheel and wheel bar made up of fiber.

| **Parameter** | **Stainless Steel** | **Aluminum** | **Copper** | **Galvanized Iron** |
|---|---|---|---|---|
| Sut ($N/mm^2$) | 440 | 300 | 220 | 394.4 |
| Weight | Medium | Low | Low | High |
| Cost | Low | High | High | Low |
| Surface Finish (Aesthetic) | Best | Better | Better | Better |
| Ease In Manufacturing | Flexible | | | Brittle |
| Availability | Easily | Easily | Easily | Easily |

**3. Design of Body**

A baby walker made up of steel tube having diameter 12.5 mm.

A seamless pipe made up of 16MO30 steel having Sut = 440 $N/mm^2$

½ inch pipe, O.D. = 12.7, I.D. = 10.7

Thickness of pipe = 1 mm each side

Consider a baby having weight = 10 Kg = 98.1 N

Wheel diameter = 5cm

98.1 N


**Fig 3.1:** Model reaction

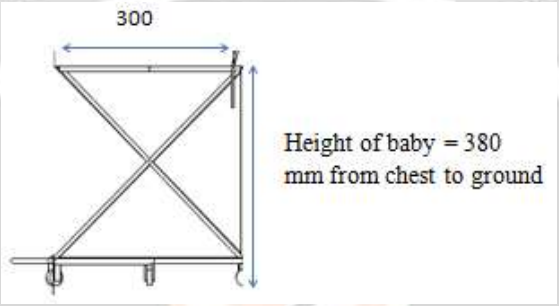


**Fig 3.2:** Reaction analysis

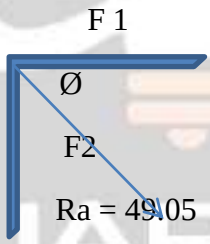


**Fig 3.3:** Force analysis

Ra =?

Tan Ø = (AE / EG) =330/300 = 1.1

Ø = $Tan^{-1}$(1.26) = 47.72 degree

Tan 47.72 = (RA/ F1)

1.1= 49.05/f1

F1 = 44.6

Ra and Fg are equal due to lever rule

F1 * OA = OG* F2

OA=OG

F2 = 44.6 N

**4. Model of Baby Walker:**

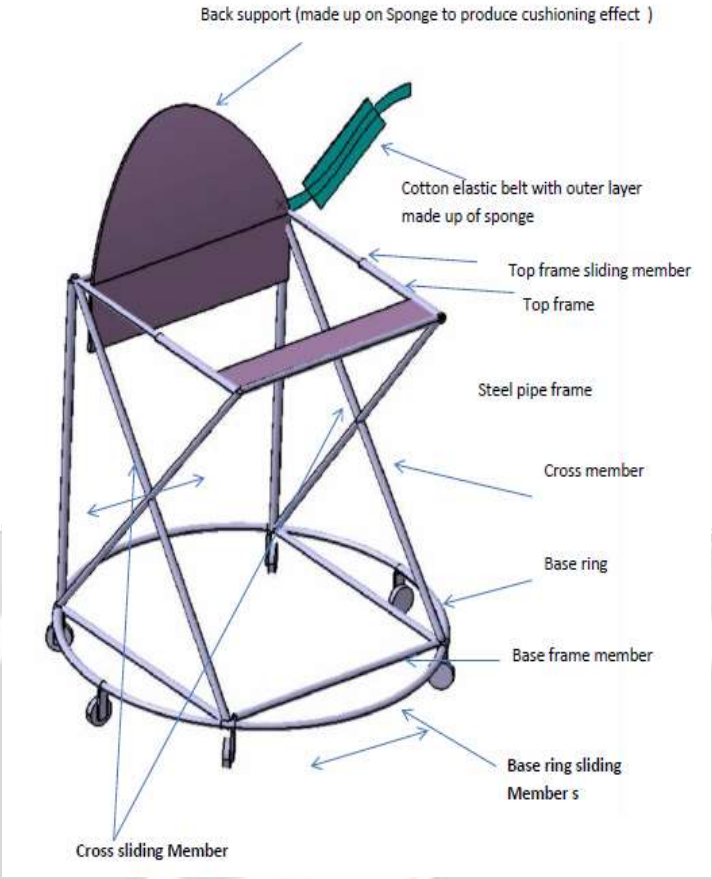


**Fig 4.1:** Model of baby walker

**5. Advantages:**

(1) It is used as multipurpose.
(2) To avoid fall of baby, belt system is used.
(3) Other walkers do not support back of baby but our baby walker give support.
(4) Baby can easily balance itself and learns walking faster than other baby walkers which are present in market.
(5) Baby walker is light in weight.
(6) Walker can move easily in any direction.
(7) Walker can adjustable according to baby's height.
(8) It teaches baby to walk proper.
(9) It is the safer.
(10) In developed countries recent improvements are occurs in baby walker to walk baby properly but people in developing countries cannot get these baby walker due to high cost and safety issue.

**6. Disadvantages**

(1) It cannot control speed when inclination of ground is high.
(2) It cannot use in outdoor.
(3) At high inclination walker cannot stop.
(4) May tilt or can be unbalanced when force applied at a point.

**7. Conclusion**

Thus the baby walker studied by different ways and can be use. The following conclusions are drawn:

1) Baby walker teaches a baby proper walks.

2) A walker doesn't harm a baby in any way.
3) Walker's height and size can be adjusted also can be used as pangulgada.
4) It moves in any direction.

**8. Future Scope**

Future scope will be as follows:

(1) In a walker, automatic breaking system can be used for more safety of baby at downward slope where walker goes fast and can cause injury to baby.

(2) Any provision of other modification such as detachable or adjustable table can be provided for study.

(3) Entertainment system such as musical panels can be provided so that baby can feel comfortable.

(4) Children can be entertained in other ways. Stationary walkers have no wheels but have seats that rotate and bounce such as the exersaucer.

**9. References**

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