

New Generation of Hip Protectors

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Introduction

Aiming to enhance the compliance of hip protectors among the elderly, we develop a new generation of hip protectors including 2 designs for people with incontinence and those without this concern respectively. Given that some elderly suffering from neurodegeneration like Alzheimer's disease may lose their way home sometimes, we also add a GPS tracking device to help families and caregivers to locate them. Through increasing the comfort and convenience of hip protectors, the compliance and thus the effectiveness of preventing post-fall hip fracture will be improved.

Design Rationale

Target population:

- ✓ People vulnerable to falling, especially the elderly
- ✓ People prone to getting lost, such as suffering from Alzheimer's disease



Features of Hip Pro 2.0:

- ★ 2 designs of the pants:
 - 1 Boxer shorts for ordinary users
 - 2 Groin cut-out design for people wearing diapers due to incontinence
- ★ 2 small and removable pads for hip joint protection and separate washing of the pants
- ★ Soft and elastic cotton fabric for people of different body sizes
- ★ Effective sweat evaporation and heat dissipation
- ★ Convenient press stud design for easy dressing and undressing
- ★ GPS tracking device to detect the location of the user
- ★ Various hip protectors on the market as our references [1,2,3]



Project Outcomes & Evaluation

2 trials were carried out and involved 5 potential users. Positive feedback was received.

Trial 1:

Various designs of hip protectors were provided to the potential users who were asked to give comments. Elements tested included different fabrics for the pants, hook-and-loop fasteners, press studs, and elastic bands. Thin, soft, smooth and elastic fabrics with good heat dissipation function were the most important factor in users' compliance. Press studs were preferred to hook-and-loop fasteners. Elastic bands might induce discomfort and thus were not recommended.



Trial 2:

Based on the feedback received in trial 1, two new hip protectors were produced. The potential users put on them and compared them with other pants on the market [1,2,3]. The hip protectors made by our group were chosen as the best designs, and these potential users are willing to wear our pants in the future when necessary.



Limitations & Further Investigations

- 💡 The GPS device can be smaller and thinner to ensure no discomfort around the waist.
- 💡 A larger sample size is required to collect more diversified feedback for further improvement of the designs.
- 💡 Possible directions for further investigations include modifying the materials of the pads and adding a fall-detection device.



Conclusion and Reflections

With this new generation of hip protectors designed for people with and without incontinence respectively, the compliance of hip protectors among the elderly and their effectiveness of preventing post-fall hip fracture can be ameliorated. We are very honoured to have participated in such a meaningful project which contributes to the health promotion in society, especially against the backdrop of ageing population. We would also like to express our heartfelt gratitude to our Community Partner and Group Mentor for their unremitting and invaluable support. All in all, HIP PRO 2.0 – YOUR HIP PROTECTION HERO!