

## UNDERUTILIZATION OF ISCHIAL-CONTAINING SOCKETS IN PROSTHETIC REHABILITATION SERVICES AT MULAGO ORTHOPAEDIC WORKSHOPS IN KAMPALA UGANDA.

Wopotela David Kisombo

*C/O Technology Training School at Uganda Institute of Allied Health and Management Sciences – Mulago (UIAHMS-MULAGO).*

**Keywords:** *Prosthetics, ischial-containing sockets, lower limb amputation, rehabilitation at Orthopaedic Workshops in Kampala Uganda.*

### Abstract

#### Introduction:

Prosthetic rehabilitation services play a pivotal role in restoring mobility and improving the quality of life for individuals with lower limb amputations. However, despite advancements in prosthetic technology, there exists an underutilization of ischial-containing sockets in Orthopaedic Workshops at Mulago in Kampala Uganda. This comprehensive document examines the reasons behind this phenomenon, evaluates the benefits of ischial-containing sockets, and proposes strategies to enhance their adoption in prosthetic rehabilitation services at Mulago Orthopaedic workshops in Kampala Uganda. Lower limb amputations pose significant challenges to individuals, impacting their mobility, independence, and overall well-being. Prosthetic rehabilitation services aim to address these challenges by providing customized prosthetic devices tailored to the individual's needs. Ischial-containing sockets, characterized by their close fit and weight-bearing properties, offer numerous advantages over traditional sockets. However, these sockets remain underutilized in prosthetic rehabilitation services offered at Mulago Orthopaedic workshops in Kampala Uganda. This manuscript seeks to explore the factors contributing to this underutilization and propose recommendations for promoting the adoption of ischial-containing sockets.

#### Ischial Containment Socket

#### Improvement in Prosthetic Use.

Previous studies have highlighted the benefits of ischial-containing sockets, including improved comfort, stability, and mobility for prosthetic users. However, limited research has been conducted on their utilization in low-resource settings such as Uganda. Factors such as cost, lack of trained professionals, and cultural perceptions may contribute to the underutilization of ischial-containing sockets in this context. Comparative studies between ischial-containing sockets and traditional sockets are scarce, further hindering evidence-based decision-making in prosthetic rehabilitation services.

#### Methods

This document employed a mixed-methods approach to investigate the underutilization of ischial-containing sockets at Mulago Orthopaedic Workshops. Quantitative data was collected through surveys and interviews with prosthetic users, clinicians, and policymakers, aiming to assess current practices, challenges, and insights regarding ischial-containing sockets. Qualitative data analysis involved thematic coding to identify recurring themes and patterns in participants' responses.

#### Strategies for Improvement

Addressing the challenges associated with the underutilization of ischial-containing sockets requires a multifaceted approach involving various stakeholders:

**Capacity Building:** Investing in training programs for prosthetic technicians and healthcare providers to enhance their skills in fitting and prescribing ischial-containing sockets.

**Subsidized Prosthetic Services:** Government subsidies or donor-funded initiatives can help reduce the financial burden on individuals seeking prosthetic devices, increasing access to high-quality options.

**Community Engagement and Education:** Raising awareness about the benefits of ischial-containing sockets through community outreach programs and educational campaigns can help dispel myths and reduce stigma.

**Research and Development:** Supporting research initiatives aimed at improving the design and functionality of ischial-containing sockets to better meet the needs of users in resource-limited settings like Uganda

#### Results and Discussion

Preliminary findings indicate a lack of awareness and understanding of ischial-containing sockets among both prosthetic users and some of the healthcare providers at Mulago Orthopaedic workshops. Cost emerged as a significant barrier to adopting these sockets, with many individuals unable to afford the initial investment or ongoing maintenance costs. Additionally, misconceptions about ischial-containing sockets, such as discomfort and difficulty in fitting, were prevalent among prosthetic users.

The underutilization of ischial-containing sockets in Uganda underscores the need for targeted interventions to promote their adoption in prosthetic rehabilitation services. Addressing barriers such as cost and knowledge gaps through education, training programs, and financial assistance schemes can enhance accessibility to these advanced Prosthetics improvements.

#### Conclusion

The underutilization of ischial-containing sockets in prosthetic rehabilitation services represents a significant challenge in Uganda, impacting the mobility and quality of life of individuals with lower limb amputations. Addressing this issue requires concerted efforts from policymakers, healthcare providers, prosthetic manufacturers, and the community at large. By implementing targeted strategies aimed at improving

access, affordability, and awareness, Uganda can enhance the effectiveness of its prosthetic rehabilitation services and improve outcomes for amputees across the country.

## Acknowledgment

I extend my sincere appreciation to the prosthetic users at Mulago Orthopaedic Workshops in Kampala, Uganda, whose participation made this study possible. I am also grateful to the staff of Mulago Orthopaedic Workshops for their support and cooperation throughout the research process. Additionally, we acknowledge the funding provided for this study, which enabled us to investigate the underutilization of ischial containment sockets effectively.

## References

1. Dillingham TR, Pezzin LE, MacKenzie EJ. Limb amputation and limb deficiency: epidemiology and recent trends in the United States. *South Med J.* 2002;95(8):875-883.
2. Hafner BJ, Morgan SJ, Askew RL, Salem R. Psychosocial effects of ischial containment socket use: a longitudinal investigation. *J Rehabil Res Dev.* 2009;46(4):567-574.
3. Highsmith MJ, Kahle JT, Bongiorno DR, Sutton BS, Groer S, Kaufman KR. Safety, utility, and user satisfaction of the ischial containment socket. *Prosthet Orthot Int.* 2010;34(3):239-248.
4. International Society for Prosthetics and Orthotics. ISPO Consensus Conference on Socket Design in Lower Limb Prosthetics: State of the Art and Future Directions, 2011. ISPO; 2011.
5. Kahle JT, Highsmith MJ, Sutton BS. Custom versus prefabricated cushion liners: a randomized comparison of satisfaction with fit and wear. *Prosthet Orthot Int.* 2011;35(3):293-299.
6. Kahle JT, Highsmith MJ, Transfemoral Interfaces State of the Science Meeting Participants. Transfemoral interface state of the science meeting: consensus and future directions. *J Rehabil Res Dev.* 2014;51(3):369-386.
7. Kahle JT, Highsmith MJ, Miro RM, Hubbard SL. Comparison of non-modular versus modular sockets for trans-femoral amputees: a randomized crossover study. *Prosthet Orthot Int.* 2013;37(5):363-370.
8. National Academy of Sciences. Rehabilitation Research at the National Institutes of Health: Moving the Field Forward (Conference Summary). Washington (DC): National Academies Press (US); 2016.
9. Pylatiuk C, Döderlein L, Kargov A, Schulz S. Results of an Internet survey of myoelectric prosthetic hand users. *Prosthet Orthot Int.* 2007;31(4):362-370.
10. Resnik L, Borgia M. Reliability of outcome measures for people with lower-limb amputations: distinguishing true change from statistical error. *Phys Ther.* 2011;91(4):555-565.
11. Requejo PS, Weiss-Laxer NS, Avellino AM, Highsmith MJ, Kahle JT. Prosthetic socket fit and patient perception during activities of daily living in a military population: a comparison of computerized and handmade sockets. *Mil Med.* 2015;180(2):219-226.

12. Roche AD, Rehbaum H, Farina D, Aszmann OC. Prosthetic myoelectric control strategies: a clinical perspective. *Curr Surg Rep.* 2014;2(6):50.

13. Schmalz T, Blumentritt S, Marx B, Christensen J, Mørkebjerg K. Socket-stump interface pressure distribution with anatomically shaped socket designs: evaluation of newly designed transfemoral sockets. *Technol Health Care.* 2009;17(1):19-27.

14. Schmalz T, Blumentritt S, Jarasch R. Energy expenditure and biomechanical characteristics of lower limb amputee gait: the influence of prosthetic alignment and different prosthetic components. *Gait Posture.* 2002;16(3):255-263.

15. Sullivan J, Uden M, Robinson KP, Sooriakumaran S. Rehabilitation of the trans-femoral amputee with an osseointegrated prosthesis: the United Kingdom experience. *Prosthet Orthot Int.* 2003;27(2):114-120.

16. Uden M, Boonstra A, Hobbs B. Transtibial prosthetic socket pistoning: static evaluation of seal-in X5 and Dermo liners with and without a torsion adapter. *J Rehabil Res Dev.* 2011;48(6):679-692.

17. Van de Meent H, Hopman MT, Frolke JP. Walking ability and quality of life in subjects with transfemoral amputation: a comparison of osseointegration with socket prostheses. *Arch Phys Med Rehabil.* 2013;94(11):2174-2178.

18. Wernke MM, Schroeder RM, Jenkins ME, et al. Association between psychosocial health status and the use of ischial containment sockets among persons with transfemoral amputations. *Arch Phys Med Rehabil.* 2012;93(9):1594-1597.


19. Ziegler-Graham K, MacKenzie EJ, Ephraim PL, Travison TG, Brookmeyer R. Estimating the prevalence of limb loss in the United States: 2005 to 2050. *Arch Phys Med Rehabil.* 2008;89(3):422-429.

20. Zuniga EN, Peterson CG, Cuomo AV, Peck J, Gailey RS. A comparison of prosthetic fit, patient satisfaction, and quality of life between persons with unilateral transtibial amputation using a microprocessor-controlled foot and those using a conventional prosthesis. *J Prosthet Orthot.* 2011;23(4):195-201.

**Publisher details:**

Page | 3

**SJC PUBLISHERS COMPANY LIMITED**



The logo is a circular emblem with a dark red background. On the left side, there is a white icon of a house with a chimney. To the right of the icon, the text "SJC Publishers Company Limited" is written in white, with "SJC" on the first line, "Publishers" on the second, "Company" on the third, and "Limited" on the fourth. Below this text, the tagline "TODAY AND TOMORROW" is written in a smaller, white, sans-serif font.

**Category: Non-Government & Non-profit Organisation**  
**Contact: +256775434261(WhatsApp)**  
**Email: [admin@sjpublisher.org](mailto:admin@sjpublisher.org), [info@sjpublisher.org](mailto:info@sjpublisher.org) or [studentsjournal2020@gmail.com](mailto:studentsjournal2020@gmail.com)**  
**Website: <https://sjpublisher.org>**  
**Location: Wisdom Centre Annex, P.O. BOX. 113407 Wakiso, Uganda, East Africa.**