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SATISFACTION AND EXPERIENCE WITH THE UNITY SUSPENSION SYSTEM

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BACKGROUND

While elevated vacuum suspension systems have some benefits over the other suspension approaches [1–5], elevated vacuum may not be appropriate for all amputees. The Unity sleeveless vacuum suspension system was developed to overcome issues related to knee range of motion and amputees comfort [6]. This study compared the Unity suspension system with suction and pin/lock systems based on user satisfaction and experience with these systems.

METHODS

Twelve people with unilateral transtibial amputation were fitted with the Ossur Unity elevated vacuum suspension system, with 57.2 (SD=15.3) years mean age, 178.3 (SD=6.4) cm height, and 90.6 (SD=16.4) kg weight. Participants completed the Prosthesis Evaluation Questionnaire (PEQ) for their current prosthesis and again, following a minimum 4 week accommodation period, for the Unity suspension system.

RESULTS

On average, participants required seven sessions (SD=2) for casting, gait training, socket adjustment, and troubleshooting before successful fitting. All participants mentioned no movement inside the socket and improved proprioception (i.e., feel where the prosthetic leg is in space) compared to their previous suspension system. After completed the study protocol, 75% of participants (nine people) preferred to continue with the elevated vacuum suspension system since they felt more comfortable walking. Two people preferred their original pin/lock suspension system because they felt more freedom and comfort during kneeling and their job required kneeling most of the time. One participant preferred to continue with his original suction system (Seal-in X5 and one way valve) because he felt more pressure around the seal area with Seal-In V and elevated vacuum.

All Prosthesis Evaluation Questionnaire scores improved with Unity suspension system (Table 1).

Table 1: Prosthesis Evaluation Questionnaire scales

Validated Scale	Subjects (old prosthesis)	Subject (UNITY)	How many % improved
Ambulation (AM)	64.9	81.2	25
Appearance (AP)	69.2	81.7	18
Frustration (FR)	57.2	75.0	31
Perceived Response (PR)	75.5	87.5	16
Residual Limb Health (RL)	54.9	75.6	38
Social Burden (SB)	72.5	81.9	13
Sounds (SO)	61.3	69.9	14
Utility (UT)	53.4	75.7	42
Well Being (WB)	60.0	77.8	30

CONCLUSION

Amputee satisfaction can be improved with the Unity system compared to pin/lock and suction sockets. However, Unity may not be appropriate for some amputees since there is less freedom and comfort during kneeling compared to pin/lock systems. In this study, a high functioning group with transtibial amputation (K3, K4) was recruited. The Unity system's effect on comfort for people with lower activity levels is still unclear.

DISCLOSURE

There is no conflict of interest in this study.

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