INTRODUCTION

Previous research has shown that clear biomechanical differences exist between the different microprocessor (MP) controlled prosthetic knees available on the market (1). However, it remains unclear whether these biomechanical differences translate into differences in benefits in the patient’s everyday life. The purpose of this study was to investigate differences in perceived difficulty and safety while performing activities of daily living (ADL) with two different MP controlled prosthetic knees.

METHOD

A convenience sample of 10 unilateral transfemoral amputees (all male; mean age 36.2±10.2 years; mean time since amputation 12.5±9.6 yrs; 5 patients MFCL-3, 5 patients MFCL-4; 9 traumatic, one cancer related amputation) who gave informed consent and had been using a C-leg for 5.4±2.0 years on average were enrolled to this study. They answered a questionnaire on the importance and difficulty to perform 45 ADLs with their C-leg prosthesis. Importance had to be rated “very important” (3 points), “somewhat important” (2) or “not important” (1). Difficulty had to be rated “very easy” (6 points), “easy” (5), “somewhat easy” (4), “somewhat difficult” (3), “difficult” (2) or “very difficult” (1). Patients were then fitted a prosthesis with the Genium® Bionic Prosthetic System in the other leg. None of the 45 ADLs was perceived more difficult or too unsafe. Similarly, the fear of falling is necessarily be confirmed by objective measurements (ADL). Although the patient’s perception may not directly correlate to activity avoidance independent of the actual objective risk of falling (2-5). Therefore, increased perceived safety and decreased perceived difficulty of a set of ADLs rated important for the amputees’ everyday life by use of the Genium Bionic Prosthetic System may improve function, independence, and participation of the patients.

RESULTS

The mean importance rating of the 45 ADLs was 2.58±.64 with the C-leg and 2.59±.63 with the Genium, respectively. Thus it can be assumed that the questionnaire had covered a set of ADLs that the patients perceived as very important and can make a difference to their everyday lives.

DISCUSSION

Technological and biomechanical differences between microprocessor controlled prosthetic knee joints may result in differences in perceived difficulty and safety when performing activities of daily living (ADL). Although the patient’s perception may not necessarily be confirmed by objective measurements of performance and safety, it may prevent the patient from performing an activity if it is perceived too difficult or too unsafe. Similarly, the fear of falling is directly correlated to activity avoidance independent of the actual objective risk of falling (2-5). Therefore, increased perceived safety and decreased perceived difficulty of a set of ADLs rated important for the amputees’ everyday life by use of the Genium Bionic Prosthetic System may improve function, independence, and participation of the patients.

CONCLUSION

This study has demonstrated that the Genium Bionic Prosthetic System may further improve perceived difficulty and safety of important ADLs in experienced C-leg users.