

# Effect of Sports Prostheses on Improving Quality of Life and Participation in Sports in Young Adults

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## Introduction

Sport prostheses are currently available through the NHS in England for children who have suffered limb loss or were born with a limb deficiency, to enable them to engage in physical activity and sports.

In amputees, sport is associated with a beneficial effect on the cardiopulmonary system, psychological well-being, social reintegration and physical functioning.

## Aim

We investigated the effect of sports prostheses on young adults' quality of life and participation in sports.

## Results

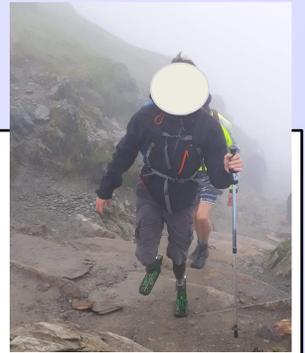
### Demographics (n=14)

- Median age was 12.6 years (range 7-19).
- 10 (77%) were male, 3 (23%) were female.
- Diagnoses included PFFD (3), congenital talipes equinovarus (3) and fibula hemimelia (2).
- 2 (15%) had bilateral amputations.
- 5 (38.5%) underwent Symes amputations, 4 (30.8%) had trans-tibial and 2 (15.4%) had trans-femoral amputations. 2 (15.4%) had a Van Ness rotationplasty.

## Results

### QoL (n=11)

- The sports prostheses were worn on average 8.2 hours per day. 8 (72.7%) wore it at least 3 days per week.
- 8 (72.7%) stated it was their favourite prosthesis.
- 6 patients stated they had made new plans since acquiring the blade prosthesis, including taking part in the 3 peaks challenge (see figure 1), more running, more walks and modelling (see figure 2).
- 3 patients used the sports prosthesis for alternative activities including modelling, showering and as 2nd prosthesis (after wearing the standard prosthesis at school all day).



Figures 1a and 1b. A patient using his sports prostheses to do the three peaks challenge and stated he "could not have done it without the blades". Written consent was gained from the patient regarding the use of these photographs.



Figure 2. One patient used his prosthesis as a professional model. Written consent was gained regarding the use of these photographs.

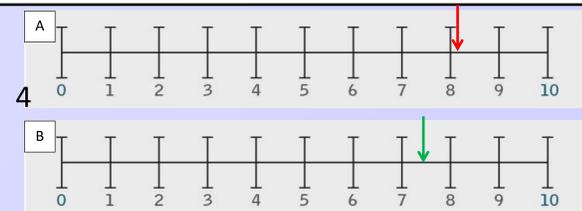


Figure 4. Reported happiness (A) whilst wearing the sports prosthesis was an average of "8.1" (range 5-10, median 8), and confidence (B) was "7.5" (range 2-10, median 8), on a 1-10 scale.

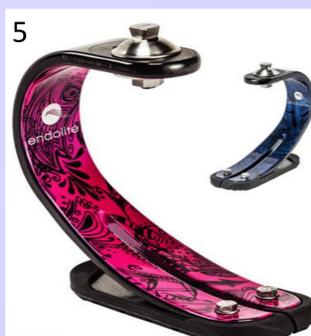


Figure 5. The Blatchford Mini BladeXT Prosthesis. Paediatric patients typically receive this as it is the smallest blade and fits well for those with shorter heights.

## Methods

### Subjects

- All patients with a NHS sports prosthesis attending our centre were included (n=14)
- Two patients were unavailable and 1 was deceased (Ewing's sarcoma).

### Design

- A purposely designed questionnaire was piloted on 3 patients and improved and then used to telephone interview each patient and their parents after obtaining verbal consent

### Setting

- Mobility and Specialised Rehabilitation Centre Sheffield, UK

## Results

### Sports and Activity (n=11)

- Following provision of sports prostheses, **all took part in PE/school activities** (increase from 7 (63.6%) to 100%) and **all were able to run** (increased from 3 (27.3%) to 100%).
- Sports participation increased** from 6 (54.5%) to 8 (72.7%).
- 7 patients reported **fewer falls** (63.6%) and in total 9 (81.8%) had either no or fewer falls.
- 10 (90.9%) reported they were **able to walk further** with 5 (54.5%) describing this as "a lot further".
- Reported favourite sports varied and responses included football (3), running (2), cycling (2), snowboarding (1), swimming (1) and badminton (1).

## Discussion

Sports should be included in rehabilitation programmes along with encouragement to pursue a physically active life style.

## Conclusions

**Overall, sports prostheses enabled increased physical activity and sports participation, reduced falls and were used regularly.**

Although the cohort is small, the results **justify a cautious but optimistic trial in adults** with the hope of improving participation in physical activity to enable the associated benefits.