Translation and linguistic validation of the Swedish version of “Orthotics and Prosthetics Users’ Survey” (OPUS)

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Abstract:

There is a lack of valid Swedish instruments to assess the overall outcome of upper limb prosthetic treatment. The Orthotic and Prosthetic Users’ Survey (OPUS) consists of five questionnaires assessing common goals in prosthetic and orthotic practice. The OPUS measures health related quality of life, satisfaction with device and services, respectively, and functional status of upper and lower extremities, respectively. Hence, this instrument could be a useful tool for outcome assessment of Swedish practice. Following the guidelines by the World Health Organization, the questionnaires were translated to Swedish and validated linguistically. Thirty-nine persons (12 men, 27 women) representing the target groups for OPUS participated in the study. During a regular visit at the prosthetic-orthotic out-patient clinic, the participants answered the relevant questionnaires and were systematically debriefed immediately afterwards. In most cases the items were understood as intended. In a few cases words and expressions had to be changed to avoid misunderstandings or diverse interpretations of the items. The resulting Swedish version of OPUS showed acceptable linguistic validity. A study on construct validity and reliability of the Swedish OPUS is in process and preliminary results will be presented.

LEARNING TO USE AN UPPER ARM PROSTHESIS: DOES ORDER OF PRACTICE MATTER?

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INTRODUCTION

Although most people are fitted with a prosthesis after upper extremity amputation, the prosthesis is often not used in daily life. In fact, 20 to 40% of the upper extremity amputees do not use their prosthesis at all, mainly due to a low degree of functional use [1,2,3]. This functional use can be enhanced by training [4,5]. For example, Carter et al. [5] showed that of the amputees who received training, 90% used their prosthesis in daily life, compared to only 50% of the amputees who did not receive a training after fitted with a prosthesis. Thus, training helps, but how should a training look like?

The current training methods used in the rehabilitation of upper limb amputees seem effective considering the fact that amputees learn to handle their prosthesis. However, there seems to be room for improvement because the prosthesis is not used in tasks that have been trained [6].

The current study examined the role of the structure of the training in the effect of prosthetic training to determine which order of practice tasks (i.e., random or blocked) had the highest effect on performance with an upper limb prosthesis. We examined training of able-bodied participants that used prosthetic simulators because there are only few upper limb amputees. We used two types of simulators, a myo-electric prosthesis and a body powered prosthesis with a voluntary opening hand, because these are the types of prostheses most widely used.

METHODS

72 able-bodied participants (36 men and 36 women (sd) age 21.07 (2.32) years) used an upper arm prosthetic simulator that strongly resembled the functioning and control of a real prosthesis (Figure 1); 36 participants used a myo-electric simulator and 36 participants used a body-powered simulator. For each simulator there were four groups of participants: group one practiced random and was tested random (RR), group two practiced random and was tested blocked (RB), group three practiced blocked and was tested blocked (BB), and group four practiced blocked and was tested random (BR).

On the first day, in the acquisition phase, participants received a training in which three tasks had to be executed, each consisting of 20 trials. To determine the effect of learning from the first day, a retention test—with execution of 5 trials of each training task—and a transfer test—with 5 trials of three new, more functional based tasks—were conducted on the second day. The three tasks to be executed in each phase were based on direct grasping, indirect grasping and fixating [7].

In the acquisition and the retention test a wooden cylinder had to be grasped with the prosthetic hand (direct grasping), a cylinder had to be handed over from the sound hand to the prosthetic hand (indirect grasping) and a ruler had to be fixated to draw a straight line (fixating). In the transfer test a mug had to be placed on a shelf by the prosthesis, a jar had to be handed over to the prosthetic hand after which the lit had to be turned off, and for the fixating task a pencil was sharpened with a sharpener. Initiation time—time from the start signal to initiation of the movement—and movement time—time between start of the movement and end of the movement—were used as outcome measures, recorded in milliseconds.

Figure 1. The body-powered simulator (upper row) and the myo-electric simulator (lower row)

RESULTS

We found no effects of initiation time. Although movement times of both the random and the blocked group got faster during the acquisition ($p = .000$), the blocked group had faster movement times in the acquisition phase than the random group ($p = .009$) and learning in this group extended over the complete acquisition phase ($p = .000$). However, this advantage disappeared in the retention and transfer tests, and no differences were found between the groups in the tests. This can be seen in Figure 2. Another interesting result was that the movement times were faster with the body-powered simulator in acquisition ($p = .004$) and in the transfer test ($p = .034$) compared to the myo-electric simulator.

Figure 2. Movement time in seconds for each of the two groups (random (R), blocked (B)) in the acquisition (divided into 4 blocks) and for the four groups (RR, RB, BR and BB) in the retention test and transfer test.

CONCLUSION

The fact that no differences were found between the groups in the retention and transfer tests, implies that the order of practice does not influence performance after training or the performance of tasks other than trained. The clinical implication of this finding is that neither of the two tested orders of practice tasks (random or blocked) is preferred over the other. However, the results did show that training in a blocked order leads to faster performance.

Therefore we suggest practicing at least a part of the training in a blocked fashion. The advantage of a blocked order is that people learn more quickly how to handle the prosthesis, which saves time prosthetic learners have to spend in rehabilitation. This steady improvement can motivate the trainees to pursue the training and use their prosthesis more often at home.

NOTE

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