

SKI TRAINING FOR AMPUTEES

JOLANTA MAJEWSKA

Cracow, Poland.

ABSTRACT

Rehabilitation by sport is of importance in regard to champions and also to the every-day life of ill and crippled people.

The value of sport, on the one hand, as a part of the rehabilitation of amputees and, on the other hand, in satisfying the need for movement in the blind has been repeatedly demonstrated. However, thorough study is required to improve training methods and to enable the disabled to practice the particular sport events.

Skiing is of special importance in the rehabilitation of disabled people.

In 1956 the first ski courses for amputees were organized in Poland and showed that those who had undergone a limb amputation are able to practice this event in rehabilitation.

Introduction

Skiing, compared to other sport events, is characterized by different motion technique which is composed of the slide on the ski, proper reaction to action of centrifugal force when changing direction, considering the force of inertia and gravity when skiing and the best use of the muscle strength. Thus it is necessary to acquire new movement habits and to improve equilibrium and proprioception which in amputees are weakened because of walking on the artificial limbs.

The method of training in case of the disabled is the same as in regard to the quite healthy people. The exercises are carried out collectively, the participants being divided into groups according to skiing skill and general efficiency.

The training scheme of this event comprises:

1. Exercises on flat areas – learning to walk and run and move the arms at the same time; stepless moving, alternative two- and onestep, turning on the spot; shifting from one foot to the other and back by shifting the ski noses; learning to fall and to stand alone, which is of special importance in case of the disabled.

2. Exercises on hilly ground; learning to climb, run aslant the slope, down the slope, how to slide and change the direction; shifting from one foot to the other and "to-the-slope" christiania. Progression is taught by the parallel technique which has proved to be the best within the range of the disabled. It should be noted that after amputations within the lower leg people have no greater difficulties in making turns to the right or to the left. But after the amputations within the femur people have difficulty in turning from edging to the opposite side of the amputation.

Skiing gives a crippled man the best chance to

improve his movement efficiency due to the all-round development of the basic movement elements like speed, deftness and endurance. Skiing is useful to crippled people not only because of the good influence of the outside environment such as our country's beautiful mountains, but also the form of movement itself, acts positively on the human body. Even simple ski movements like walking, running, climbing or running downhill require multiple muscle group work, as not only the muscles of the legs but also those of the arms and of the whole trunk work. The trunk moves in all planes.

The muscles of the shoulder girdle work very actively. Skiing strains are mainly dynamic – only some muscle groups work statically (wrist extensors and flexors, finger flexors, back muscles etc). Co-ordination is developed by constant proprioceptive and reflex pattern interplay.

Correct ski training develops the compensation mechanisms and improves efficiency in those muscle groups which in every-day life, when walking on the prosthesis, are active in a small degree. A lot of ski movements as: walking or running down add in great measure to master the technique of walking on a prosthesis by gradual removing of the deviations from regular gait that often occur in the case of people after amputation, as: 1. shorter time of prosthesis load (very disadvantageous because leading to overstrain of the other healthy limb), 2. track deflection of the prosthesis movement from the sagittal plane, 3. trunk oscillation in the frontal plane, 4. the pelvic limbs being spaced too much.

The improved locomotion system, more strength and endurance contribute also to the restoration and keeping the psychic equilibrium and to the forming of strong character of the disabled.