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Exercise recommendations after total joint replacement: a review of the current literature and proposal of scientifically based guidelines

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This article presents a literature review of the current recommendations regarding sports after total joint replacement and also suggests scientifically based guidelines. Patients should be encouraged to remain physically active for general health and also for the quality of their bone. There is evidence that increased bone quality will improve prosthesis fixation and decrease the incidence of early loosening. To recommend a certain activity after total knee or hip replacement, factors such as wear, joint load, intensity and the type of prosthesis must be taken into account for each patient and sport. It has been shown that the reduction of wear is one of the main factors in improving long-term results after total joint replacement. Wear is dependent on the load, the number of steps and the material properties of total joint replacements. The most important question is, whether a specific activity is performed for exercise to obtain and maintain physical fitness or whether an activity is recreational only. To maintain physical fitness an endurance activity will be performed several times per week with high intensity. Since load will influence the amount of wear exponentially, only activities with low joint loads such as swimming, cycling or possibly power walking should be recommended. If an activity is carried out on a low intensity and therefore recreational base, activities with higher joint loads such as skiing or hiking can also be performed. It is unwise to start technically demanding activities after total joint replacement, as the joint loads and the risk for injuries are generally higher for these activities in unskilled individuals. Finally, it is important to distinguish between suitable activities following total knee and total hip replacement. To recommend suitable physical activities after total knee replacement, it is important to consider both the load and the knee flexion angle of the peak load, while for total hip replacement, which involves a ball and socket joint, the flexion angle does not play an important role. During activities such as hiking or jogging, high joint loads occur between 40 and 60 degrees of knee flexion where many knee designs are not conforming and high polyethylene inlay stress will occur. Regular jogging or hiking produces high inlay stress with the danger of delamination and polyethylene destruction for most current total knee prostheses. Based on these design differences between hip and knee replacements it is prudent to be more conservative after total knee arthroplasty than after total hip arthroplasty for activities that exhibit high joint

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loads in knee flexion.

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