Many patients would like to resume some sport activities after total knee replacement; however, most recommendations are based on subjective opinion rather than scientific evidence. The following paper presents a literature review of sports after total knee replacement and includes recommendations which are based on biomechanical laws. Most total knee designs show increased conformity near full extension. Beyond a certain knee flexion angle, the conformity ratio decreases due to a reduced femoral radius. Therefore, these designs accept higher loads near full extension than in flexion. In order to recommend suitable physical activities after total knee replacement, both the load and the knee flexion angle of the peak load must be considered. It has been shown that power walking and cycling produce the lowest polyethylene inlay stress of a total knee replacement and seem to be the least demanding endurance activities. Jogging and downhill walking show high inlay stress levels and should be avoided. Hence, for mountain hiking, patients are advised to avoid descents or at least use skipoles and walk slowly downhill to reduce the load on the knee joint. It must also be mentioned that any activity represents additional wear, which may affect the long-term results of total knee replacements. Further clinical studies are necessary to validate the biomechanical investigations.